Volume 93 Number 19

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

SLIGHTLY groggy from a series of critical jabs lately directed toward it, NRA has been given the smelling salts (p. 17) in the form of the Swope plan for self-government of industry. Mr. Swope, champion of the cause of longtime industrial planning (p. 13), in his newest proposal (p. 12) visions a sort of industrial supergovernment through which regulation, policing and planning for industry can be accomplished through trade groups, district councils and a national supervisory board. Accorded much favorable comment by industrial as well as administration leaders, official cognizance of the plan has yet to eventuate. . . . Six simple, basic principles to cover any case of unfair practice in industry have been evolved (p. 15) by NRA after a study of more than 1000 codes and trade resolutions proposed over the past 15 years.

Codes Jump Costs for Steel and Automobiles

Codes are proving to be expensive propositions, estimates indicating the steel code to have added $100,000,000 to costs, the automobile code (p. 19) to have added $40,000,000. Despite these burdens, steel leaders agreed to a compromise with the President on the price for rails, splitting the difference (p. 18) between their quotation of $37.75 per ton and the government's suggestion of $35. Likewise, automobile builders are disinclined to pass along added costs to car buyers and are banking (p. 19) on the psychological importance of a stationary price position for 1934 sales. It is thought that dealers will be in a better position as the result of attempts to establish uniform trade-in allowances under code regulation.

Production Off, But Encouraging Signs Appear

Business sentiment (p. 55) continues doubtful, with the national steel operating rate (p. 75) down 5 points to 25 per cent and headed lower. Federal loans for public works, allocation (p. 62) of $135,000,000 for rails and fastenings, and an $84,000,000 railroad electrification program involving the purchase of locomotives and cars may turn the tide, however. . . . Pig iron production for October declined (p. 16) over 10 per cent from September and in excess of 25 per cent from the August peak. . . . Third quarter financial reports of 12 leading steel companies, representing about 87 per cent of ingot capacity, show (p. 13) a combined loss of $3,046,000, amounting to about 42 cents per ton produced. This compares with second quarter loss of $2.86 per ton and first quarter deficit of $13.70 per ton.

Combating Overheating in Reversing Motors

Electric motors for use in fast reversing service, such as on drilling and tapping machines, may become overheated to the extent of damaging the motor insulation. Increasing the number of reversing cycles per minute, dulling of cutting tools and rise in room temperature are causes of this overheating, which can be curbed (p. 25) by installation of a thermostat and thermal relay on the motor. . . . Rise in room temperature is desirable these days as the winds become chillier, and stimulus is thus given to the production and distribution of domestic gas heaters which, estimates show, annually (p. 45) account for the consumption of about 1000 tons of iron and steel, mostly in the form of castings.

Furnaces, New and Old, Built for Service

Relieving stresses in welded steel pipes 30 feet in diameter and 24 feet long (p. 28) calls for a new technique from furnace engineers. These huge pipe sections are for use at Boulder dam and recently a special furnace was erected near the dam for heat treating the sections. . . . An electric furnace which handled 32,844 heats of steel in its 15 years of service, has been decommissioned (p. 34) and set up as a monument to its efficiency. . . . Where impact strength is desired, normalized low-alloy steels should not be used (p. 30) at temperatures below -150 degrees Fahr. . . . Impact of heavy boulders is resisted successfully (p. 29) by an 18-foot diameter steel sphere, made up of 1¼-inch butt welded plates, and used as a boulder trap on a Cape Cod canal dredge.

Plan for Self-Government of Industry*

IT IS highly desirable that much of the great adventure of the national industrial recovery act be made permanent, that the splendid beginning of organization of trade and industry in working out codes of fair competition be continued and become the broad foundation on which is built a structure of commerce and industry which will render better and less wasteful service to the public, which will collect and study data of the needs of the public, leading to a better co-ordination of production and consumption and with a consequent greater stabilization of industry and employment.

The following program is suggested for achieving self-government of industry and utilizing some of our business institutions and adapting them to the procedure now being worked out under the national industrial recovery act:

I

The body of each trade association will elect the executive authority to carry out the provisions of the code—sometimes called the "code authority"—which will be the board of directors, the executive committee, or a committee specially selected for that purpose, on which body will be one or more representatives appointed by NRA or the department of the government taking over this work permanently. Such representatives of the government will protect the public and consumer interest, and will receive all data and information that is available to the board of directors, or executive committee, as well as the minutes of the meetings of the board of directors, the executive committee and any other committees of the association.

II

In accordance with the code, members of each trade association shall report regularly to its governing board and through it to NRA or the department of the government taking over this work permanently, such data and information as may be called for from time to time. Each codified trade association, as it becomes more familiar with the essentials of its work and responsibilities, will study the data collected, study the trends of its industry, endeavor to coordinate production and consumption, all of which should lead to a greater degree of stabilization of industry, with consequent benefits to employer, stockholders, employes and the public.

III

If the governing board of the codified association is unable to exact compliance with the code by any recalcitrant member, the complaint shall be laid before the federal trade commission, or the department of justice, or both.

IV

At the present time, there exist trade and industry organizations in many states and other geographical divisions of the country, and such associations have performed and can perform useful functions. It is suggested that such divisional associations be grouped together within the same geographical boundaries as defined for the federal reserve districts, so that the information and statistics compiled by such trade groups will be available for interpretation and study on a comparable basis with the information compiled by the federal reserve banks in such district.

V

In the larger cities, also there are merchants associations and chambers of commerce, and these, too, can be coordinated with the work of the larger geographical divisions and the national codified associations. Such local chambers of commerce and state or district trade associations will be especially concerned with such matters in their particular geographical divisions and might send delegates to the meetings of the national body.

VI

There shall be a National Chamber of Commerce and Industry located in Washington, which may well be an enlargement and development of the present Chamber of Commerce of the United States, with the necessary reorganization along the lines of this program. The three main divisions of the National Chamber of Commerce and Industry will be,

(a) Commerce or trade—in this division will be the various codified national retail and wholesale distributing associations, and those of kindred interest will be grouped together.

(b) Industry or manufacturing—in this division will be the various codified national manufacturers associations, such as the Textile institute, the American Iron and Steel institute, etc. Codified associations having kindred interests will be grouped together, such as the present National Association of Manufacturers or the National Metal Trades association.

(c) Associations representing local or geographical divisions.

VII

There shall be an economic and statistical bureau of the National Chamber of Commerce and Industry, of which the highly organized and efficient National Industrial Conference board of New York shall be the nucleus, and in which such other independent economic and statistical bodies now supported by merchants and manufacturers may be incorporated. All statistical reports and data from each national codified association, shall be sent to the economic and statistical bureau of the National Chamber of Commerce and Industry in Washington, and to NRA or department of the government taking over this work permanently. In this economic and statistical bureau will be centered the study of all statistical information. The tabulation and interpretation of such will be published from time to time.

VIII

In unifying the efforts of trade associations, standardization and simplification of products becomes even more important than in the past. The bureau of standards of the department of commerce of the United States has in the past done notable work, but now finds this work much curtailed because of lack of funds. Industry has also carried on such work through the American Standards association, supported by subscription of a comparatively few companies. It is proposed that the National Chamber of Commerce and Industry will establish a bureau of standards, in which will be incorporated the American Standards association and such of the work of the bureau of standards of the department of commerce as the government thinks it desirable to have undertaken by this bureau.

IX

The delegates of the National Chamber of Commerce and Industry shall elect a board of governors. The board of governors shall elect it sofficers and an executive committee. The secretary and assistant secretary of commerce of the United States shall be members of the board.

The board shall elect a panel of (?) members, which will sit in Washington and act as a board of appeals on any questions that may arise in the interpretation ad enforcement of the natioal code provisios, and will endeavor to see that such interpretations are consistent. On this panel will also sit such number of representatives as may be appointed from time to time by the President of the United States. It is the desire to secure as members of these panels the highest type of business men to cooperate with the government, and therefore, not to make this too burdensome, membership on the panel shall be limited to not more than four months, and the panel shall be divided into fourths so that each month one-fourth of the panel will retire and another fourth take up the work.

X

Almost every manufacturer or merchant now belongs to and subscribes to a number of local, state, divisional, or national associations, in addition to organizations bringing together manufacturers or merchants of similar interest, and to organizations for other purposes. Under this plan, each manufacturer or merchant would of course belong to his particular codified national association and pay by prorata assessment the expenses of conducting the association, which would include the necessary expenses of the National Chamber of Commerce and Industry. An organization such as this briefly sketched would unify industry and commerce. It would consolidate the many demands on manufacturers and merchants for contributions and support, and make these various efforts more effective and less costly. Its information would be comprehensive and reliable.

*As presented by Gerard Swope to the business advisory and planning council for the department of commerce, Nov. 1, 1933.

Swope for Superstate over NRA Codes; News of Week

GERARD SWOPE, president of General Electric Co. and champion longtime planner for business and industry, last week inaugurated what appears to be the second phase of NRA.

A week after resigning from the industrial board of NRA, and as chairman of the business advisory and planning council of the department of commerce, Mr. Swope on Nov. 1 proposed the reorganization of business along self-governing lines.

To make permanent "the great adventure" of the national industrial recovery act—somewhat reminiscent of President Hoover's characterizing prohibition as a "noble experiment"—Mr. Swope urged industry to organize through trade associations, that these associations and chambers of commerce band together in districts contiguous with the federal reserve system, and over all be a sort of national chamber of commerce—a supreme court of industry.

Not only would such a setup administer NRA codes, greatly in preference to the local compliance or policing system devised by General Johnson, but it would also fly danger signals when a peak such as 1929 appears to be approaching, and would continue the standardization work which the bureau of standards is jettisoning because of economy.

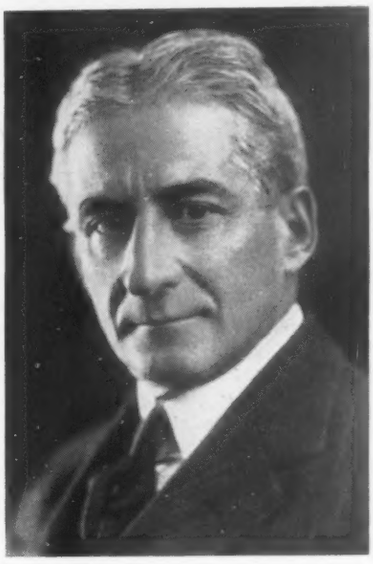
Printed in full on the opposite page, Mr. Swope's constitution for business and industry looms as the most important development since the passage June 16 of the recovery act under which NRA has been codifying industry.

It recalls his address before the National Electrical Manufacturers' association Sept. 16, 1931, when he proposed collectivism for industry, the formation of trade associations, synchronization of production with consumption, and plans providing workmen's compensation, pensions, and life, disability and unemployment insurance.

Proposing a program in Washington is one thing; getting it adopted is another. Gen. Hugh S. Johnson, NRA administrator, professes to be in "complete agreement" with Mr. Swope, to have discussed the plan with him "for years," and to view it as an outgrowth of the idealism of co-operation during the war emergency which failed of perpetuation after the war because of a lack of cohesion in industry.

The chamber of commerce of the United States, which might be converted into the proposed national chamber, is avid for the plan, as might be expected, and is assembling its directors Nov. 21. The National Association of Manufacturers is only lukewarm at the start.

¶Mr. Swope, it should be noted, laid down his constitution for industry as chairman of the business advisory and planning council of the department of commerce, a distinct group from the NRA advisory board. The latter board, however, is drawn from the planning council.



Gerard Swope

A change in plan is to rotate members of the board, to bring fresh viewpoints into NRA, as General Johnson puts it. The labor advisory board, however, will remain stationary.

Steel gets its first representation on this advisory board because Mr. Swope and four others stepped off Nov. 1. This steel spokesman is Myron C. Taylor, chairman of the United States Steel Corp. Also going on the board now is R. E. Flanders, president of the Jones & Lamson Machine Co., Springfield, Vt.

Financial

STEEL producers' losses in the third quarter were averaged down to 42 cents per ton of ingots produced, by the combination of higher prices and greater volume.

Twelve leading integrated producers, having a total capacity of 58,471,000 gross tons of ingots, or 87 per cent of the country's total, reported a net deficit of only $3,046,028 for the period. Seven of the 12 went into the black, but the remaining five, including the United States Steel Corp. and the Bethlehem Steel Corp., more than offset this showing.

On the basis of these 12 companies reporting 87 per cent of the industry, the indicated total third quarter deficit for all producers was $3.500,000, or 42 cents for each of the 8,415,403 gross tons of ingots poured.

In the second quarter of 1933, on the basis of revised figures, the loss per ton of ingots made was $2.86, while in the first quarter it was $13.70.

The nine-month showing of these 12 companies is a deficit of $50,951,689, or practically one-half of the loss of $100,873,316 by the same companies in the corresponding period of 1932.

¶United States Steel Corp. in the third quarter reduced its deficit, after all charges, to $2,717,014, the best showing in more than two years and less than one-third of the deficit of $8,627,367 in the second quarter and only a fraction of the loss of $20,871,709 in the third quarter of 1932.

In nine months of 1933 the deficit of the Corporation stands at $28,074,652, compared with $54,542,431 in the corresponding period of 1932. All these deficits are before the deduction of the partial preferred dividend from surplus, the 50 cent a quarter dividend on the preferred being again declared, payable Nov. 29 to stockholders of record Nov. 2.

Mitigating the third quarter report was special income of $708,181, a proportion of interest on railroad recapture payments refunded, less reserve set up for adjustments in connection with the employes stock subscription plan. Commenting on the third quarter, Myron C. Taylor, chairman, said:

Third quarter operations averaged 40 per cent of finishing capacity, compared with 27½ in the second quarter and 16 in the first; in September, 200,559 employes were given work, an increase of 44 per cent, or 60,974 over March; average employment per month in the third quarter was 197,129 employes, contrasted with an average of 145,988 in the first quarter; because of wage increases the September payroll of $17,230,798 was 101 per cent greater than March; payrolls in the third quarter totaled $54,483,150, compared with $26,329,555 in the first quarter, an increase of $28,153,595

or 107 per cent, the direct result of the new steel code.

Detail for the corporation for the third quarter follows:

Earnings for the quarter resulting from operations after deducting all expenses incident thereto, including ordinary repairs and maintenance of plants and taxes		$11,816,832
Charges and allowances for depletion, depreciation and obsolescence		12,132,344
Deficit		$ 315,512
Interest charges for the quarter:		
On bonds of subsidiary companies	$1,275,141	
On United States Steel Corp. bonds outstanding	3,363	
		1,278,504
Total deficit from operations		$ 1,594,016
Add, proportion of overhead expenses (of which taxes alone are $1,542,897) of the Lake superior iron ore properties and Great Lakes transportation service, normally included in the value of the season's production of ore carried in inventories, but which because of curtailment in tonnage of ore to be mined and shipped in 1933 is not so applied		1,831,179
		$ 3,425,195
Special Income: Proportion of interest on railroad recapture payments refunded, less reserve for account of adjustments in connection with employes' stock subscription plan		708,181
		$ 2,717,014
Dividend for the quarter on stock of United States Steel Corp. Preferred, 1½%		1,801,405
Total deficit for the quarter provided from undivided surplus		$ 4,518,419

¶National Steel Corp., Pittsburgh, sixth largest steel producer, showed earnings in excess of its 25 cent dividend requirement in the third quarter by reporting net profit of $756,565, equal to 35 cents a common share after all charges and federal tax. Third quarter earnings compare with $155,075, or 7 cents a share, in the third 1932 quarter and with $1,532,466, or 71 cents a share, earned in the second 1933 quarter. Company's net earnings for the first nine months this year are $2,569,876, or $1.19 a share, agaist $1,662,919, or 77 cents a share, earned in the entire previous year.

Said E. T. Weir, chairman, in commenting on the third quarter: "Earnings for the quarter were affected by labor troubles at the Weirton plant which started in late September, also by an increase in wage rate July 16. These extraordinary charges added to expenses by an amount equivalent to more than 40 cents a share, without an offset whatever in increased selling prices."

¶Inland Steel Co., Chicago, after reporting a net of $25,760 in the second quarter jumped this profit to $623,612 in the third quarter. A year ago the deficit in the third quarter was $768,588. The 9-month showing of Inland for 1933 is a loss of $362,680, compared with a loss of $2,209,111 in 1932.

¶American Rolling Mill Co., Middletown, O., reports net profit, after all charges, of $347,067 in the third quarter, slightly better than the net of $307,268 in the second quarter, and comparing with a net loss of $860,148 in the third quarter of 1932. The net loss of $312,258 in the first three quarters of 1933 is scarcely more than one-sixth of the deficit of $1,821,418 in the corresponding period of 1932.

¶Allegheny Steel Co., Brackenridge, Pa., netted 15 cents a common share by earning $152,293 after all charges, taxes and preferred dividends in the third quarter. The second quarter showed profit of $282,918 or 35 cents a common share. In the September, 1932, quarter, net loss was $288,903.

An interesting contrast was shown between the second and third 1933 quarters, reflection of a trend in the entire steel industry. While gross sales increased from $3,104,167 to $3,768,632 for the Allegheny company, the production cost item was greater disproportionately and the manufacturing profit of $627,772 in the June quarter compared with but $488,295 in the September quarter just passed.

¶Gulf States Steel Co., Birmingham, Ala., went into the black in the third quarter with a net of $166,670, after all charges, compared with a loss of $18,646 in the second quarter and a deficit of $112,426 in the third quarter of 1932. The loss in the first nine months of 1933 was only $54,543, compared with loss of $472,078 in the corresponding period of 1932.

¶Follansbee Bros. Co. Inc., Pittsburgh, reporting for the first nine months of 1933 only, had a loss of $475,348. The same period of 1932 showed net loss of $798,508. Current assets as of Sept. 30, 1933, were $2,345,156, against current liabilities of $478,171.

¶Allis-Chalmers Mfg. Co., Milwaukee, reports net loss in the third quarter, after charges, of $381,532, against loss of $788,920 in the second quarter and loss of $543,795 in the third quarter of 1932. The nine-month loss this year was $2,040,439, compared with $3,349,694 a year ago.

¶Colorado Fuel & Iron Co., Denver and Pueblo, Colo., in receivership, will issue no financial statement for the third quarter.

Public Works

DETROIT'S dream of a steel industry, a second Gary, being established on the west bank of the Detroit river from Grosse Ile to Lake Erie is being nourished this week by a vote upon the creation of a port commission for Wayne coun-

Steel Losses Are Greatly Reduced, 7 Integrated Producers Reporting Profit

All financial statistics are deficits except when asterisk denotes profit

	Third Quarter 1933	Second Quarter 1933	Third Quarter 1932	First 9 months 1933	First 9 months 1932	Annual Ingot Capacity gross tons
United States Steel Corp.	$2,717,014	$8,627,367	$20,871,709	$28,074,652	$54,542,431	27,630,000
Bethlehem Steel Corp.	283,097	3,312,846	5,425,724	9,365,394	13,782,753	9,457,000
Republic Steel Corp.	148,239*	407,451	3,419,353	2,712,647	8,640,472	4,848,000
Jones & Laughlin Steel Corp.	1,143,917	1,829,586	1,682,919	4,887,363	6,192,859	3,420,000
Youngstown Sheet & Tube Co.	1,177,576	2,207,592	3,241,444	6,858,538	9,588,038	3,240,000
National Steel Corp.	756,565*	1,532,466*	155,075*	2,569,876*	1,662,919*	2,232,000
American Rolling Mill Co.	347,067*	307,268*	860,148	312,258	1,821,418	2,200,000
Inland Steel Co.	623,612*	25,760*	768,588	362,680	2,209,111	2,000,000
Wheeling Steel Corp.	263,335*	482,143*	775,353	56,940	2,284,813	1,500,000
Otis Steel Co.	182,205	257,253	836,025	1,139,829	2,176,196	1,014,000
Gulf States Steel Co.	166,670*	18,646	112,426	54,543	472,078	480,000
Allegheny Steel Co.	152,293*	282,918*	288,903	303,274*	826,066	450,000
Total	3,046,028	14,030,186	38,127,517	50,951,689	100,873,316	58,471,000

ty (Detroit), which is to ask PWA assistance.

Along this 12-mile stretch, bordering on a channel 27 feet deep and 300 to 500 feet wide, Detroit visualizes a panorama of mills reaching out for downbound iron ore and upbound coal, with limestone available from Lake Erie or upper Michigan and ample railroad transportation in the hinterland.

At the northern end of this area the Great Lakes division of the National Steel Corp. and the two Hanna blast furnace stacks, also of National, are an anchor. A little inland is the Michigan Steel division of National, and back of that the two Ford blast furnaces and 10 open hearths. Across the river are the shells of the United States Steel Corp. two Ojibway stacks, projected during wartime but never completed.

For several years the American Rolling Mill Co., Middletown, O., has kept alive an option on a tract near Trenton, Mich., close to the southern end of this stretch, and Detroit understands that this option will be taken up this month.

Ten million dollars is the sum to be sought from PWA by the port commission—if approved.

Institute

H C. CRAWFORD, Bethlehem Steel Co., has been named chairman of the traffic managers committee of the American Iron and Steel institute, other members being: J. A. Coakley, Carnegie Steel Co.; H. E. Graham, Jones & Laughlin Steel Corp.; W. F. Morris Jr., vice president, Weirton Steel Co.; H. D. Rhodehouse, Republic Steel Corp.; W. J. Hammond, Inland Steel Co.; R. K. Keas, Laclede Steel Co.; Carl Brown, general sales manager, Gulf States Steel Co., and W. D. Lewis, Sloss-Sheffield Steel & Iron Co. Those who are not identified are traffic managers of the companies.

¶Resolution No. 29, affecting purchases by railroads, is being distributed by the institute.

Labor

INSURGENT soft coal miners of western Pennsylvania carried their troubles to the White House last week.

Dissatisfied with the offer made by captive mine owners that they would recognize representatives the men elected, 64 local unions in Fayette county, Pennsylvania, hot-bed of recent troubles, voted Nov. 1 to carry their demand for unqualified recognition of the United Mine Workers of Ameria direct to President Roosevelt.

This development blocked the accord reaehed at Washington Oct. 30

—*Wide World Photo*

HE AGREED WHEN THE PRESIDENT SAID, "LET'S SPLIT THE DIFFERENCE": Myron C. Taylor, chairman of the United States Steel Corp., leaving the White House last Monday after accepting, with other steel leaders, the Roosevelt compromise on the rail price

to reopen the mines. H. C. Frick Coke Co. and other similar operators immediately announced they would not reopen their mines until assured of protection for their employes.

Fayette county's locals, however, did not reflect unanimous opinion. Almost 1000 miners of the Vesta Coal Co., subsidiary of the Jones & Laughlin Steel Corp., in a Nov. 1 meeting voted to return to work. Others showing their intent to return were some 2000 men formerly employed at Bethlehem's western Pennsylvania mines; about 500 men at Harmarville working for Wheeling Steel Corp.'s mines; some 400 for Republic Steel's Russelton, Pa., division; and about 200 at Inland Steel Co.'s Indianola, Pa., mines. Crucible Steel's miners joined in voicing similar sentiments.

In the meantme, what looked like a successful settlement as a result of the Oct. 30 meeting at Washington between miners' representatives and mine operators aparently reverted to its former impasse. Pittsburgh steel mills, eager for coal a few months ago, were not quite so needful of fuel, as banking blast furnaces seemed to be the order of the day. What they did require continued to be imported from West Virginia mines, or other points to the south, at much higher transportation costs than if peace permitted mining of their own coal.

¶Strikers at two independent tool and die shops in Detroit were permitted to return to work Nov. 3 by their leaders on receipt of an increase of 5 cents an hour and a minimum of 85 cents.

¶W. A. Irvin, president, United States Steel Corp., in a recent address before employes of the Shenango and New Castle works of the American Sheet & Tin Plate Co., at New Castle, Pa., praised the Corporation's employe representation plan, pledged his co-operation with workers, and said that among 4500 employes in the New Castle plants only 30 had raised questions about the plan in the past five months.

¶Mackintosh-Hemphill Co.'s Garrison plant, South Side, Pittsburgh, was awarded the National Safety council's trophy on Oct. 31 for the safest iron foundry in the United States. One hundred per cent safe operation at the plant is recorded over the past year. T. W. Daniels, plant superintendent, was presented with the Safety council plaque Oct. 31 by A. P. Huckenstein, chief inspector of the Pennsylvania state department of labor.

¶The present wage agreement between the Dominion Steel & Coal Corp., Truro, N. S., and its 12,000 employes will remain in force until Feb. 1, 1935, according to an official announcement.

Codes

SIX simple basic principles, sufficient to cover practically any case of unfair practice in industry or trade, have been developed by NRA, as a result not only of a survey of more than 1000 codes already filed but also of the rules approved by the federal trade commission at trade practice conferences of 150 industries extending over 15 years.

These six principles, which will supplant the voluminous regulations in codes already approved, refer to inaccuracy in advertising, credit terms, values, policies and services; attacking competitors, including unjustified claims of underselling, threats of legal procedure, and selling below cost; price discrimination, including secret payments or allowances; commercial bribery; breach of contract; and coercion.

¶Clyde G. Conley, Mt. Vernon Bridge Co., Mt. Vernon, O., as spokesman for the structural steel and iron fabricating industry, formally presented the code for that industry at hearing in Washington, Oct. 30. He claimed 148 members of the American Institute of Steel Construction, representing about 80 per cent of the production of the industry, to be in support of the code.

The code contemplates that all structural steel fabricators in the

United States shall be subject to its provisions, not only in respect to the business of fabricating and selling structural steel but also in respect to the erection work, this being claimed as essential because erection is regarded as an integral part of the fabricating business, according to Mr. Conley.

Under the code the maximum work-week of 40 hours averages over a 6-month period, with minimum wages for each of the seven geographical districts ranging from 27 cents an hour for common labor in southern plants to $1.45 for first class bridgemen in New York City.

William Green, president of the American Federation of Labor, attacked the code. T. J. Morrin, general president, International Association of Bridge, Structural and Ornamental Workers, charged the United States Steel Corp. and the Bethlehem Steel Co. with a monopoly and enforcing an open shop in the industry. Frank P. Walsh, former joint chairman of the national war labor board, also arraigned the code from the standpoint of labor.

George E. Dix, representing the National Council of Importers and Traders, urged protection for bidders using foreign steel. C. S. Reynolds, vice president of the American Trucking association, protested provisions which predicate delivered prices on an all-rail basis, claiming discrimination against trucking interests.

R. J. Whalen, president, American Institute of Bolt, Nut and Rivet Manufacturers, speaking for 70 per cent of the companies in the industry and 90 per cent of the volume, presented the code for the bolt, nut and rivet industry, Oct. 31.

To his statement in support of the code, Mr. Whalen added that there

(*Please turn to Page 75*)

Pig Iron Output Down 13 Per Cent; 9 More Stacks Out

PRODUCTION of coke pig iron in the United States suffered another sharp recession in October, bringing the daily rate down to the lowest since June. At the same time, operating blast furnaces dropped from 89 on Sept. 30 to 80 on Oct. 31, the smallest number making iron since last May, when 61 were active.

October was the second consecutive month to show decline since the year's peak was reached in August, and in that time daily output has fallen 26.2 per cent and active furnaces have gone from 98 down to 80.

Average daily production for October was 43,699 gross tons, which compared with the 50,264-ton rate of September, was a loss of 6565 tons, or 13.1 per cent. The drop of September from August was 15 per cent. The October figure was the lowest since last June with 42,165 tons, but was more than double the 20,795-ton rate established in October one year ago.

AVERAGE DAILY PRODUCTION

	1933	1932	1931	1930
Jan.	18,348	31,336	55,337	91,573
Feb.	19,752	33,122	61,114	101,640
Mar.	17,484	31,194	65,448	104,930
Apr.	20,786	28,524	66,986	106,371
May	28,784	25,282	64,355	104,564
June	42,165	20,867	54,599	97,817
July	58,108	18,394	47,170	85,110
Aug.	59,137	17,035	41,264	81,455
Sept.	50,264	19,788	38,947	75,893
Oct.	43,699	20,795	37,831	69,851
Nov.	.....	20,858	36,727	62,182
Dec.	.....	17,650	31,625	53,732
Av.	35,993	23,699	50,035	86,141

Total production for the month was 1,354,696 gross tons, and a drop of 153,235 tons, or 10.2 per cent from the 1,507,931 tons in September. This was in spite of the fact that October was a one-day longer month than September. The month's total was the smallest since June with 1,264,953 tons. In October, one year ago, the output was 644,648 tons.

In 10 months, production has aggregated 10,941,987 tons, this being an increase of 3,440,852 tons over the 7,501,135 tons in the corresponding period of 1932. The 1931 total for 10 months was 16,180,814 tons.

MONTHLY PIG IRON PRODUCTION

	1933	1932	1931
Jan.	568,785	971,437	1,715,443
Feb.	553,067	960,550	1,711,192
March	542,013	967,015	2,028,906
April	623,606	855,734	2,009,582
May	892,326	783,769	1,995,001
June	1,264,953	626,015	1,637,998
July	1,801,345	570,222	1,462,270
Aug.	1,833,265	528,105	1,279,205
Sept.	1,507,931	593,640	1,168,436
Oct.	1,354,696	644,648	1,172,781
10 mo.	10,941,987	7,501,135	16,180,814
Nov.	.....	625,753	1,101,820
Dec.	.....	547,179	980,377
Total	.....	8,674,067	18,263,011

Relating production to capacity, operations in the month just closed were 31.7 per cent, as compared with 36.4 per cent in September and 42.8 per cent in August, peak of the year. The operating rate for October a year ago was 14.7 per cent, and 26.3 per cent for the same month in 1931.

The 80 blast furnaces making iron on Oct. 31 compared with 89 on Sept. 30 and 98 on Aug. 31, the latter being the top figure for the year. During the month 4 stacks resumed operations and 13 were blown out or banked. Of the steelworks class, 3 were blown in and 10 went out; of the merchant class, 1 resumed and 3 went out of blast. At least 2 more furnaces have been made inactive since Nov. 1.

RATE OF OPERATION

(Relation of Production to Capacity)

	1933[1]	1932[2]	1931[3]	1930[4]
Jan.	13.3	22.1	38.4	65.0
Feb.	14.3	23.4	42.5	72.1
March	12.7	22.0	45.4	74.5
April	15.1	20.2	46.5	75.4
May	20.9	17.9	44.7	74.2
June	30.6	14.7	37.9	69.3
July	42.2	13.0	32.7	60.3
Aug.	42.8	12.0	28.7	57.8
Sept.	36.4	14.0	27.0	53.8
Oct.	31.7	14.7	26.3	49.6
Nov	.....	14.7	25.5	44.1
Dec.	.....	12.5	22.0	38.1

[1]Based on capacity of 50,313,975 gross tons, Dec. 31, 1932; [2]on capacity of 51,598,175 tons; [3]on capacity of 52,515,875 tons; [4]on capacity of 51,490,680 tons. Capacities by American Iron and Steel institute.

Furnaces resuming in October were: In Ohio: Lorain No. 1, National Tube Co. In New York: One Buffalo, National Steel Corp. In West Virginia: Two Weirton, National Steel Corp.

Among the stacks blowing out or banking were: In Ohio: Massillon, Republic Steel Corp.; Ohio No. 4 and Mingo No. 4, Carnegie Steel Co.; Hubbard, Youngstown Sheet & Tube Co. In Pennsylvania: Cambria E, Bethlehem Steel Co.; Duquesne Nos. 3 and 4 and Carrie No. 1, Carnegie Steel Co.; National No. 2, National Tube Co.; one Monessen, Pittsburgh Steel Co.; Shenango No. 3, Shenango Furnace Co. In Alabama: Fairfield No. 6, Tennessee Coal, Iron & Railroad Co.; one Woodward, Woodward Iron Co.

OCTOBER IRON PRODUCTION

	No. in blast last day of month Oct.	Sept.	Total tonnage Merchant	Nonmerchant
Ohio	20	23	85,329	298,178
Penna.	23	30	35,091*	359,101*
Alabama	6	8	69,484	30,258
Illinois	5	5	17,836	87,622
New York	9	9	42,651	55,545
Colorado	1	1		
Indiana	6	6	.....	197,463
Maryland	3	3		
Virginia	0	0		
Kentucky	1	1		
Mass.	0	0		
Tennessee	0	0		
Utah	1	1	.....	76,138
West Va.	3	1		
Michigan	2	2		
Minnesota	0	0		
Missouri	0	0		
Total	80	89	250,391*	1,104,305*

*Includes ferro and spiegeleisen.

WINDOWS OF WASHINGTON

Swope Plan a NRA Lifeline?

• • •

Rail Makers Win on Points

• • •

Proposing Salary Maximums

WASHINGTON

WIDESPREAD and growing opposition to its recovery program has made the past ten days the most trying period since March 4 for the administration, softened only by the possibility that Gerard Swope's plan for a self-governing business superstate may provide an "out" for NRA.

By the same token, those who have been in doubt concerning the program, if not genuinely apprehensive over the future of business and even of the nation, appear immensely relieved, displaying the elan which follows the release of pentup emotions.

The honeymoon of the administration is over; recent developments demonstrate that. Many who for sporting or patriotic reasons have withheld their opinions in order to give the President a chance no longer feel bound by any restraint.

Most significant, perhaps, is the republican national committee's decision that the time for an opposition has arrived. "Let's Look at the Record," with apologies to Al Smith, is a critical and frank analysis of the program. Recalling how effectively the democratic press bureau "smeared Hoover," the Republican committee is out to better the instruction.

In his most vitriolic manner William Randolph Hearst, usually pro-Roosevelt, is sounding the call to arms against NRA. When Al Smith in Chicago recently referred to the "cold, clammy hand of bureaucracy" hindering recovery, there was no mistaking what he meant.

General Johnson's use of vinegar instead of sugar in handling Henry Ford has had an adverse reaction, and it may be that while the general is on his flying trip through the West to appease farmer opposition to NRA others will adjust the Ford matter.

Within the administration there is a widespread difference of opinion on gold and the monetary question in general, the theory of "the professors" that buying gold will raise commodity prices not yet being borne out. "The professors," incidentally, have supplanted the conservative treasury group, in turn successor to "the brain trust," as the President's counsellors.

Through it all the President maintains his flintlike opinion—some say obsession—that business cannot be trusted to work out its own salvation, but that a plan must always be followed. Meanwhile, the atmosphere in Washington, except within a small administration circle, appears distinctly clearer, and the capital seems more natural with plenty of steam being blown off.

GENERAL JOHNSON'S hearty "complete agreement" with the Swope plan makes some in Washington suspicious that he is clutching at a straw. Others, more reserved, maintain that it will take months to get the superstate operating; in the meantime anything may happen in the administration of codes.

Probably only the inside history of NRA will reveal the complete story, but the time element in announcing the Swope plan appears important.

It was on Oct. 24 that Mr. Swope, along with Walter C. Teagle, James A. Moffett, John D. Elliott and Austin Finch—all outstanding business men—quit the industrial advisory board of NRA. Not until Oct. 31 were their resignations announced, and only on Nov. 1 was the Swope proposal issued and the successors to the five on the advisory board named.

And when Mr. Swope laid down the constitution of his proposed superstate it was not as an NRA official but as chairman of the business advisory and planning council which Secretary of Commerce Roper set up shortly after NRA was organized. Secretary Roper also is chairman of the cabinet council which is supposed to be superior to NRA but has not functioned much—as last as appears on the surface—until NRA began developing a sizable opposition.

Recently, too, NRA began to veer away from the compliance setup which had virtually been promised to industry. In adopting codes, industries created what were known as code authorities, usually trade bodies on which the government had one to three representatives as watchdogs for the consumer.

These code authorities are now in process of being supplanted by local compliance boards organized by and under the direction of the 26 district managers of department of commerce branch offices. Instructions issued by these local boards indicate they rather than code authorities will administer codes.

Within NRA itself there is hostile opinion to this change of policy. For a compliance board in Chicago to interpret the code for barbers who are only locally competitive is one thing; for a board at Indiana Harbor to interpret the steel code for a company which is competitive with a mill at Pittsburgh, and subject to its own local board, is another.

The speculation in Washington is whether the retiring advisers, conscious of this new policy, emerged from NRA, leaving Mr. Swope as the spokesman for the Roper council to issue his plan which, as given in full on page 12, would create a long-range planning body and attempt to block off peaks of business before they become threatening.

It may be noteworthy that the Swope plan does not use the terms labor or collective bargaining, and refers to employes only twice. However, these terms appear aplenty in

the present codes to be administered.

General Johnson, in approving the plan and saying that he and Mr. Swope have been discussing it "for years," visualizes industry rising vertically as a unit to this supergovernment. Along side of it he sees labor, also organized vertically, with an authority at the top to be on even terms with the top of industry. The American Federation of Labor, however, is most antagonistic to vertical or industrial organization, and at its recent convention renewed its allegiance to craft unions.

WHEN steel leaders, comprising practically all of the directors of the American Iron and Steel institute, left the White House last Monday after conferring on the price of rails, and also the checkoff system at captive coal mines, they appeared happier than Railroad Coordinator Eastman.

Any fair umpire would rule that on his first test of authority—and he has plenty—Mr. Eastman was beaten. True, steel producers lowered their price a total of $3.62½ while Mr. Eastman came up only $1.37½, but producers did not issue any challenge and Mr. Eastman did. It was $35 or show your books, and steel has done neither.

Finding Mr. Eastman adamant for $35 and institute directors maintaining that their bid of $37.75 was fair, the President himself split the difference. PWA has since appropriated $135,000,000 for the railroads, including $51,000,000 for rails and fastenings, for 10 years at 4 per cent but no interest the first year.

Presumably those carriers not requiring PWA financing will allocate their own rails, this including the Pennsylvania's 100,000 tons. The Eastman distribution will probably be on the basis of dividing the business to spread employment the most among the four producers, consistent with the shortest haul to the purchasing line.

An announcement on track fastenings, aggregating about 220,000 tons, is expected shortly. Those steel producers who make fastenings but not rails appear to have persuaded Mr. Eastman that the fastening business should be awarded to them, other things being equal. There may not be such a pre-emptory demand concerning the price of fastenings.

In quarters in Washington which are distinctly hostile to steel, the Eastman charge of collusion by rail makers in offering a $37.75 price has aroused much interest. It was collusion for the other three makers to follow the United States Steel Corp. in adopting this price, but not collusion when the industry agreed to $36.37½ in the White House itself!

Under the steel code, virtually forced on the industry by the government, it is the price that is not uniform that arouses suspicion. On all the steel purchased by the navy department for its current program identical prices have been submitted, and the winners' names drawn out of a hat. Even Secretary Ickes accepted identical bids on cement.

Mr. Eastman, incidentally, appears to be barging into a stiffer battle than rail producers gave him. A statement by his office that he is studying the so-called Prince plan for merging eastern railroads indicates a mildly favorable attitude at least.

Under the Prince plan, the Baltimore & Ohio railroad would virtually be absorbed by the Pennsylvania, all east and west passenger traffic would be diverted to the Pennsylvania and the Baltimore & Ohio reduced to the level of a single track coal-carrying road between Pittsburgh and Baltimore.

Certain competitive passenger services of the Reading and Pennsylvania would be eliminated, also in favor of the Pennsylvania, while the New York Central would also benefit in lesser degree by a concentration of services in its territory.

The roar expected from shippers and from cities which would lose locomotive and car shops undoubtedly will be a loud one.

THE explanation of the President's pressure upon the price of rails is partially political.

High on the north wall of his oval office in the White House is mounted a tarpon, the largest one caught by the President on his fishing trip to Florida prior to his inauguration. That fish is symbolic.

Determined, as Washington believes, shortly after his inauguration to bring Wall Street into line, the President launched his so-called Pecora investigation, and when he hailed J. P. Morgan and partners to Washington to open the investigation he proved to Wall Street that none was so great as to escape the lash.

Just so with steel. Having brought steel leaders to Washington and exacted a compromise on their rail prices and their attitude on coal mine labor, he has served notice on all industry that he is not afraid. The myth of a superman, supreme over industry, is thus built up.

Possibly whenever the President lifts his eyes from his desk and gazes upward he sees not only the largest fish he ever whipped out of the ocean but also figuratively the largest fish he has hooked in both banking and industry.

Steel, as usual, was pictured after last Monday's White House session as having surrendered again. For almost 900,000 tons of rails, the compromise price fixed by the President himself represents a fair solution, while the objections of western Pennsylvania coal mine union officials indicate that the United Mine Workers organization has not been recognized.

Steel will deduct dues or any other legal assignment from any miner's pay envelope, and it will deal with whomever the miners elect, but the latter will not necessarily be union officials.

GENERAL JOHNSON'S threat to turn the Ford Motor Co. over to the department of justice if it did not report certain statistics—chiefly hours of work and wage rates—to the national automobile chamber of commerce was as safe as a prediction that Christmas this year will come on Dec. 25.

It is nowhere on record that Henry Ford has refused to comply with the automobile code; he merely refuses to sign on the dotted line and fly the blue eagle. At the time of the Johnson threat the call for reports had not been made. As a matter of fact, Ford has promised to supply figures before Chevrolet, Hupp and several other companies.

The Ford willingness to bargain collectively with employes at the Chester and Edgewater branch assembly plants is the same compliance with the recovery act that the steel companies are making at their captive coal mines. The law does not specify any automobile union any more than the bargaining at coal mines must be with the United Mine Workers.

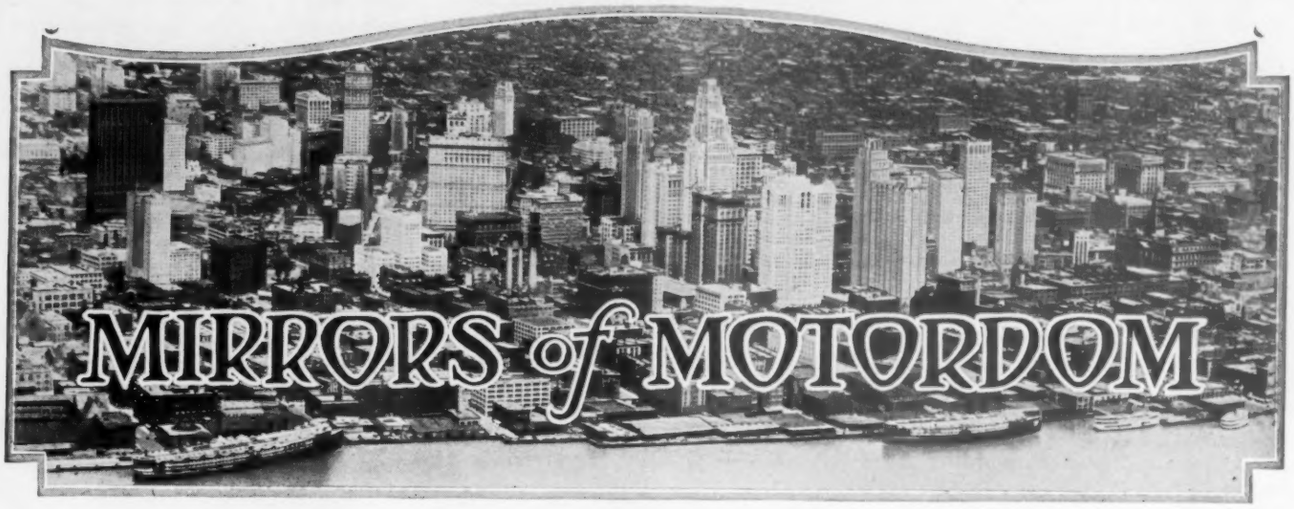
In Detroit, 300 complaints filed with the local NRA compliance board against the Ford company have been dismissed as "not legitimate" and the work of disgruntled former employes.

It is a twist of fate that the Bethesda, Md., Ford dealer whose bid to supply Ford cars the civilian conservation corps would reject, is on the NRA board for his county.

Controller General McCarl, whose decision whether failure to fly the blue eagle is sufficient to rule out the Ford bids will be final, is in a peculiarly strong position. His 15 year term is almost up, and he is not eligible under the law for reappointment.

The expected is not happening in Washington these days, but by all precedents of his own Mr. McCarl, who has been hard-boiled in dealing with government expenditures—which is the reason for a single term of 15 years—should stand by the low bid, eagle or no eagle.

As codes come up, NRA officials are suggesting salary maximums. For several branches of the iron and steel industry $15,000 has been suggested as the top. Heads of independent companies having a stock interest may be hit least because of the possibility of dividends.



DETROIT

Price Boosts Less Likely

• • •

Code Cost Is $40,000,000

• • •

Terrorization of Laborers

IT LOOKS as if the automobile industry is going to do the smart thing by not increasing f.o.b. prices on the new 1934 models much, if any.

In the early summer, when business generally was swirling upward and speculation was rampant concerning the financial burden of codes, both of the industry itself and of its suppliers, there was much talk of an immediate advance.

At least one large manufacturer bulletined its dealers that current prices could not be guaranteed beyond the month, repeating this warning for three consecutive months. But when a leading maker decided to make no adjustments during the model year the rest of the industry was compelled to stand pat.

Subsequent developments have built up a case against a sharp rise. For one thing, the temper of the administration at Washington, as revealed in negotiations for steel rails, is decidedly hostile to any policy that would materially lessen purchasing power, and to continue current levels would be to court favor in high places.

For another thing, third quarter financial reports of the industry do not disclose it to be in a precarious condition, especially when contrasted with some of its suppliers. General Motors' profit of $33,341,618 or 72 cents a common share, and Chrysler's net of $7,190,148 or $1.67 a share, are not an argument for higher prices.

True, many motor manufacturers have not been touched with the magic wand of profit, like General Motors and Chrysler, but since these two interests have produced about 70 per cent of all the cars sold this year, they supply the public its cue.

A STATIONARY position in prices in 1934 might prove a psychological factor of great importance.

In a genuinely bullish year a matter of $50 to $100 per car does not affect sales appreciably, but if 1934 is another year in which the United States counts its dollars carefully, such advances might defer a decisive number of sales.

The dealer, anyway, is going to be in a better position next year through the operation of the retail automobile code—if it works—and in many instances the position of the dealers is in greater jeopardy than that of the manufacturer.

Beginning about Nov. 12 to 15 trade-in values will be governed by a fixed factor, which will be the actual current market price of the car in question, to be determined by averaging recent sales.

In a large measure—and completely if the code fulfills the hopes entertained for it—"shopping" will be eliminated and dealers will not be in the position of bidding against each other until they have surrendered most of their profit and commission.

Hence, the probability that the dealer will make more profit and the buyer pay more cash without any revision of the factory price.

A large number of sales undoubtedly have been driven in the past three months by the double threat of higher f.o.b. prices and narrowed trade-ins. It may be that so many sales have been matured in this manner that early 1934 business may have been injured severely. But the salesmen have been half right.

DESPITE the extensive covering at the lower prices effective prior to the imposition of current levels, material costs of automobile manufacture this quarter are appreciably higher than during the third quarter.

The 10 to 15 per cent advance in most wage rates also is a fresh burden. Smaller volume, a seasonal factor due to the end of the model year, makes unit costs mount.

The shorter work week of the automobile code, however, is without a major bearing inasmuch as many plants have been operating 40 to 48 hours since the code was made effective, planning to average down to the 35-hour week specified in the code by the layoffs this month and last for the changeover in models.

Compared with its principal supply in industry—steel—in which the annual cost of its code is estimated at $100,000,000, the forecast of the incidence of the automobile code is generally about $40,000,000.

For a 2,000,000 car year, or a year the proportions of 1933, it is believed that code requirements will increase employment 41,000 men; for a 2,500,000-car year about 81,000 more; for a 3,000,000-car year about 123,000 extra.

The history of production fluctuations in the automobile industry is that there is always a lag in overhead per unit. That is, if 1934 were to develop sharp improvement in retail sales, factors entering into overhead would expand more slowly than production, while on the downside of production the contraction is slower. Hence present prices combined with volume next year would in a measure requite producers.

One way to offset rising costs is to cheapen cars—which is not as opprobrious as it sounds. Without compromising safety or detracting from looks, it is possible to substitute slightly cheaper or lighter materials, effecting substantial savings when the car is considered as a whole. Pencils have been sharpened recently in more than one automobile plant in Detroit.

Not a few in Detroit believe that the stage is being set more favorably to Ford than to some of his competitors in 1934. At the first sign of basic improvement in business Ford will make a strong bid in the extremely low price field, in which he made his name and fortune, either by a reduction in the price of the present model

or through introduction of his much-discussed small car.

The ascendancy of W. S. Knudsen in General Motors automobile manufacturing operations is another bear factor on price advances. The unprecedented rise of Chevrolet in the low price field is due chiefly to Mr. Knudsen's insistence upon value. In fact, Henry Ford and W. S. Knudsen are counted upon in Detroit to keep the lid on and to prefer profits resulting from a small veneer over a large volume.

DETROIT'S experience the past few days with the tool and die strike illustrates the tense labor situation and the difficulty of coping with it.

In many independent tool and die shops and in these departments of automobile manufacturers a noteworthy percentage of employes has expressed a willingness to return, but a campaign which is nearer terrorization than intimidation has intervened.

Last week, as daily newspapers reported, a motorized wrecking crew invaded a number of plants which had resumed and did considerable damage to property and parked cars of employes before police protection could be obtained.

An out-of-state tool and die maker, seen driving away from an automobile plant with blueprints, was crowded to the curb, his car searched and the warning given that any further attempt to take business out of Detroit would have serious personal consequences.

Some automobile manufacturers believe a group not representative of the strikers has obtained the upper hand of the latter's organization. To what extent automobile plant labor itself has been forced into unions is problematical, and the reopening of some plants on new models this month is being awaited with interest.

Each succeeding week in which body and fender dies—the heavy work which few shops outside Detroit are equipped to handle—are delayed casts a shadow on some proposed changes in 1934 models. It is not impossible that some extensive changes now proposed may be held over, but labor developments will be conclusive on this.

So far as known, Hupp will go through with its 1934 program, the most startling detail of which is the teardrop body design. Unlike one maker who has designed a front whereby fenders and radiator are practically one piece, Hupp will have rounded front fenders and a slight valley between fenders and radiator shell.

Headlamps, it is understood, will be drawn out of the fenders, with one horn mounted under each lamp. The rake of the radiator will be identical with that of the windshield. Hupp this year will probably not go to independent springing of wheels or to an automatic gear shift.

The Hupp six is expected to be maintained in practically its entire price class. In the 1933 series there are two eights—one priced barely higher than the six and the large eight. In 1934 there probably will be only one eight, which will have a greater spread over the six than the present low price eight.

Died:

WILLIAM H. ABBOTT, 58, for many years vice president in charge of sales for Wheeling Steel Corp., Wheeling, W. Va., at the Ohio Valley General hospital, recently. He had been associated with the Wheeling company, or its predecessors, for 35 years.

In 1898 he joined the Wheeling Corrugating Co.'s New York office, first as salesman, later becoming assistant manager and finally manager. Shortly afterward he was called to Wheeling and made assistant secretary of the Wheeling Corrugating Co. Later he succeeded Alexander Glass as secretary, when the latter became presidest, and was also made vice president of the Whitaker-Glessner Co.

When Wheeling Steel Corp. was formed he became vice president in charge of sales. During the War, Mr. Abbott was closely identified with the operations of the War Industries board and in 1921 assisted in the framing of steel schedules for the Fordney-McCumber tariff bill. He was widely known and respected for his broad grasp of the intricate details of the steel and steel-fabricating industries.

For many years he served on the executive committee of the National Association of Sheet and Tin Plate Manufacturers and later in the same capacity with the Association of Flat Rolled Steel Manufacturers. Aside from prominence in civic and social affairs of Wheeling, he was a member of the Union League club, New York, and the Duquesne club, Pittsburgh.

□ □ □

Thomas De Coursey Ruth, 64, vice president, Robert J. Emory & Co., manufacturer of wire winding machinery, Newark, N. J., in that city Oct. 27.

□ □ □

William H. Wallace, 78, one of the pioneer crucible builders and operators in western Pennsylvania, at Pitsburgh, Oct. 31. He was born in Philadelphia, went to Pittsburgh in 1888, and for 44 years was plant superintendent of the McCullough-Dalzell Crucible Co., Pittsburgh.

□ □ □

Wilford H. Levens, 38, president of the Levens Wheel & Brake Co., Birmingham, Ala., Oct. 22, when a motor boat on the Warrior river capsized.

□ □ □

Charles T. Robertson, for many years superintendent of the pattern shop of Mesta Machine Co., Homestead, Pa., at Pittsburgh, Oct. 21, after a long ilness.

□ □ □

Julius J. Goetz, 65, founder and president, Western Metal Specialty Co., Milwaukee, Oct. 30. He was born in Germany, coming to America as a boy, and founded the stamping works in 1910.

□ □ □

Gelston Bailey Morris, 53, retired vice president of the Morris & Bailey Steel Corp., Pittsburgh, at his home, Scarborough - on - Hudson, N. Y., Oct. 27. He had been retired since the company, which made cold-rolled strip steel, sold out to American Steel & Wire Co. a few years ago.

□ □ □

John S. Beall, president and manager, Beall Pipe & Tank Corp., Portland, Oreg., Oct. 23, after a short illness. He was born in Dalton, Ga., Nov. 19, 1867, and went to Portland when 23. He was engaged in the machinery business until 1905, when he organized the company of which he was president.

□ □ □

H. H. Gibboney, 54, chief chemist of the Norfolk & Western railroad, at Roanoke, Va., Oct. 30. He was a past president of the American Society for Testing Materials and had been a member of its executive committee as well as vice president. Prior to going with the Norfolk & Western, he was chemist for the Virginia Iron, Coal & Coke Co., Roanoke, in 1903 and 1904.

□ □ □

Adolph J. Scheid, 71, treasurer and Milwaukee branch manager, Columbia Tool Steel Co., Oct. 29. He was born in Kalamazoo, Mich., and went to Milwaukee in 1900 to establish the branch office and warehouse. His eldest son, Adolph J. Jr., is associated with the main works at Chicago Heights, Ill., and his other two sons, Carl F. and Robert B., are associated with the Milwaukee branch.

Open Bids on Chain Nov. 13

Inquiry for 522 tons of chain and shackles for the lighthouse bureau, Staten Island, N. Y., calls for bids by Nov. 13, the largest items including 407 tons of wrought iron open link buoy chain, ¾ to 1⅝-inch, and 106 tons of wrought steel shackles.

Industrial Men in the Day's News

J. Ralph Patterson, General Sales Manager, Mackintosh-Hemphill Co.

His first job after leaving school was as field engineer in building a steel company's plant.

Erecting and equipping important Pittsburgh mills gave him just the kind of experience he sought.

This knowledge proved invaluable in selling products of the company, whose sales department he now heads.

MACKINTOSH-HEMPHILL CO.'s new general sales manager, J. Ralph Patterson, brings to his job both experience in the erection and installation of steel mill equipment and machinery, and training in the selling of the equipment.

As noted recently in STEEL, Mr. Patterson has been associated with Mackintosh-Hemphill for the past 11 years. Prior to that for nine years, he was identified with the building of certain important departments of two of the Pittsburgh district's leading steelmakers.

Born in Beaver, Pa., after graduating from the public schools there he began his business career with the Pittsburgh Crucible Steel Co., Pittsburgh, a subsidiary of the Crucible Steel Co. of America. His first job with that company was as a field engineer at the Midland, Pa., works when that mill was being built in 1913.

Shortly afterward, when Jones & Laughlin Steel Corp. decided to put in its Aliquippa, Pa., pipe mills, Mr. Patterson went with that company as field engineer.

His next business affiliation was with the Pittsburgh Iron & Steel Foundry Co. in 1916. He served as an engineer, then in the production department, and subsequently in the sales department.

This foundry was taken over by the Mackintosh-Hemphill Co. in 1922. At that time he became assistant manager of the company's Adamite sales, and four years later was made manager of the Adamite sales.

Early in 1930, Mr. Patterson was placed in charge of roll and alloy sales, which position he held until his most recent appointment as general manager of sales. This includes not only rolls, castings and alloys, but also rolling mill equipment and heavy steel mill machinery. He is a resident of Beaver.

□ □ □

James P. Barton has been appointed sales engineer in the electrical sheet division of the Empire Sheet & Tin Plate Co., Mansfield, O. He was formerly connected with the radio engineering department of the Westinghouse Electric & Mfg. Co., at East Pittsburgh, Pa., and Springfield, Mass., the engineering department of General Motors Radio Corp., at Dayton, O., and with Phelps Dodge Copper Products Corp., Inca manufacturing division, at Fort Wayne, Ind. He is a member of the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the American Society for Testing Materials, and is the author of several papers presented in the journals of the American Institute of Electrical Engineers.

□ □ □

Lloyd Jones, who resigned recently as manager of the Salem, O., works of E. W. Bliss Co., Brooklyn, N. Y., has become vice president of the Continental Roll & Steel Foundry Co., East Chicago, Ind., with headquarters in Pittsburgh. Mr. Jones had been with the Bliss company for approximately the past ten years, prior to which he was chief engineer for the United Engineering & Foundry Co., Pittsburgh.

□ □ □

Mark P. Ohlsen, of Cedar Grove, Wis., who was connected with the Brillion Iron Works, Cedar Grove, up to 1929, and is now president and general manager of the Schwab Furnace & Mfg. Co., also Cedar Grove, has been elected general manager of the Brillion Pulverizer Co., which is the successor to the bankrupt Brillion Iron Works. The new company will continue the manufacture of Brillion soil pulverizers and packers.

□ □ □

C. F. Herington, formerly with Westinghouse, Church, Kerr & Co., New York Central and Pennsylvania railroads, and Heyl & Patterson Inc., Pittsburgh, is manager of the newly organized metallurgical division of the Raymond Bros. Impact Pulverizer Co., with headquarters in the Chicago office of the company. This new division will supply a full line of coal pulverizing, transporting and burning equipment for complete powdered fuel installations in the steel, malleable iron and allied industries.

□ □ □

A. V. Grove has been transferred from the Cleveland office of Steel & Tubes Inc. to the Chicago office, where he is attached to the sales department.

R. E. Doyle is now sales correspondent in the Cleveland office.

J. F. Keeler has been made sales engineer, with headquarters in the Cleveland office.

□ □ □

Harvey D. Stalnaker, formerly president of the Stalnaker Steel Co., Pittsburgh, is now Pittsburgh resident manager of the Joseph Schonthal Co., Columbus, O., with headquarters in the First National Bank building, Pittsburgh.

□ □ □

William D. Bliss, professor of industrial relations and chemical engineering at Marquette university, Milwaukee, has been elected president of the Engineers' Society of Milwaukee. He is a graduate of the colleges of engineering of Marquette university as well as the University of Wisconsin.

□ □ □

Herbert A. Davies, manager of the Birmingham, Ala., office of the Virginia Bridge & Iron Co., is head of the industrial division of the Birmingham community chest drive.

□ □ □

Louis Steinfurth, formerly chief engineer and assistant manager of the Economy Machinery Co., Willoughby,

(*Please turn to Page 75*)

EDITORIAL

They Were Pioneers in Better Merchandising of Steel

WITHIN the brief period of seven months death has taken from the American Institute of Steel Construction Inc. the two principal executives of its staff and the steel industry in general has lost its two foremost champions of better merchandising for steel.

Charles F. Abbott, executive director of the institute, who died Oct. 27, and Lee H. Miller, its chief engineer, who passed away April 9, comprised a team unparalleled in the history of the iron and steel industry. Working together harmoniously for a period of about 10 years, they were the leading exponents of systematic promotion and cultivation of markets for steel. While their efforts were devoted chiefly to advancing the interests of structural steel and the benefits of their work accrued primarily to the steel construction branch of the steel industry, their influence was felt in a much broader field. Inevitably some of the seed of their ardent espousal of the cause of steel "for strength and security" took root in fertile ground, grew to maturity and was harvested profitably by others than the fabricators of structural steel. Steel producers and rolling mill interests benefited more from the activities of the late team than was generally realized until recently, when the leading interests gave recognition of their appreciation by becoming members of the institute under a change in the constitution which provided for such membership.

Influence of American Organization Was Felt Throughout Industrial Europe

Nor was the influence of their work confined to the United States and Canada. The idea which Messrs. Abbott and Miller developed so effectively here soon attracted attention in Europe. Investigators from abroad studied the American organization. Gradually steel construction associations sprung up in the leading industrial countries of Europe. The remarkable growth of the movement was evidenced at the last convention of the institute when greetings from no less than 11 European "institutes of steel construction" were presented.

The basic idea which motivated the work of the unique team is simplicity itself. It is that if you know your product thoroughly, have unbounded faith in it, and can convey that knowledge and faith to all persons who influence or control the potential use of that product—then sale of the product, even in the face of stern competition, will be made easier.

The late Mr. Miller was well qualified to know the product. He knew the properties and advantages of structural steel as few others did. He developed formulas to assist architects, contractors and others to specify and use steel more intelligently. His close contact with users of steel enabled him to see new fields for the application of the material. The market has been broadened as a result of his studies.

From a background of rich sales experience, the late Mr. Abbott brought to the team a high appreciation of the value of placing the right kind of promotional information at the disposal of persons who could use it advantageously. He was a thorough believer in the force of publicity and advertising, and was unusually adept in organizing to utilize these forces effectively. Under his direction, the institute was geared to dramatize the results of Mr. Miller's work—to disseminate the truth about the properties of steel so thoroughly that a national consciousness of steel as the master material of construction gradually would be created.

Campaigned for Steel Through Personal Appeals and Liberal Use of Publicity

For 10 years the two carried on this campaign for steel with unremitting vigor. They visited the principal cities of the country scores of times, addressing builders, contractors, architects, engineers, students, state and municipal politicians, chambers of commerce, clubs, etc. Everywhere they spoke of the advantages of steel. Concurrently a constant flow of educational material was issuing from the institute offices. Much of the constructive information regarding steel as a material which has appeared in the public press during the past decade originated from the publicity activities of the American Institute of Steel Construction Inc. Also it is safe to say that Messrs. Abbott and Miller in that period talked to more potential users of steel than any two other individuals in any span of years.

The future of steel merchandising probably will show that these two were pioneers, that they were about a decade ahead of their industry. Unless we are badly mistaken, the idea which they advocated so earnestly, in spite of the lethargy of a traditionally production-minded industry, will become the dominant theme in the management of steel companies before the end of this decade.

To carry on the work of Charles F. Abbott and Lee H. Miller is a task challenging the best talent of the industry.

THE BUSINESS TREND

More Resistance Is Developing Against Business Decline

EVENTS of the past week demonstrate clearly how futile and how unnecessary it is for industrial executives to permit their anxiety over the trend of government policy to influence their views of the outlook for business.

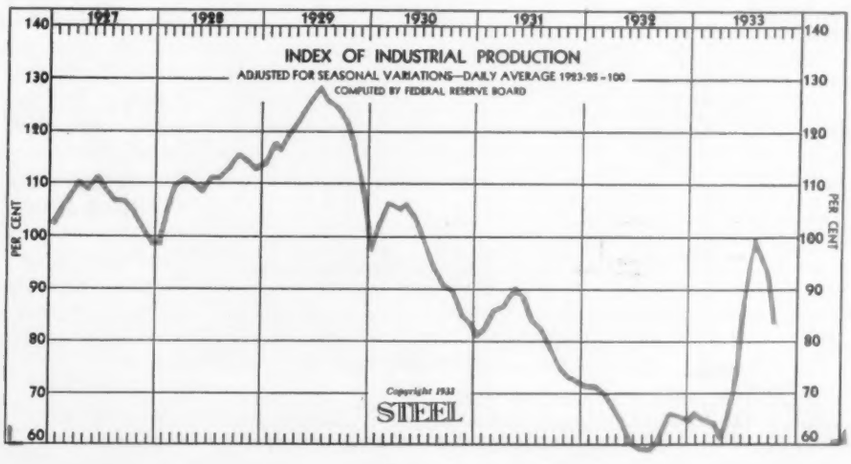
A week ago in some executive circles the prospect was described as "black." It was said that the President had turned to the left, that the NRA administration was becoming alarmingly dictatorial and needlessly belligerent, that the freedom of criticism was threatened, that the money policy had been turned over to amateur theorists, etc. Unquestionably there was much evidence of disturbing tendencies in Washington.

However, as has happened so many times in recent months, the actual developments were not as alarming or as harmful as was feared. The Ford-Johnson fued did not proceed to the point of showdown. The contemplated spy system scheme of NRA was shelved in favor of a plan of industrial policing. The government is more wary of incidents which may be construed as throttling free speech. The steel rail and captive mine problems were ironed out by horse-trading methods, and the "victory" of the President was not anything like it was represented by the majority of newspapers. Of all the crises imminent a week ago, only the uncertainty of monetary policy remains disturbing at this moment.

Undercurrent of Improvement Is Noted in Latest Statistics of Industry

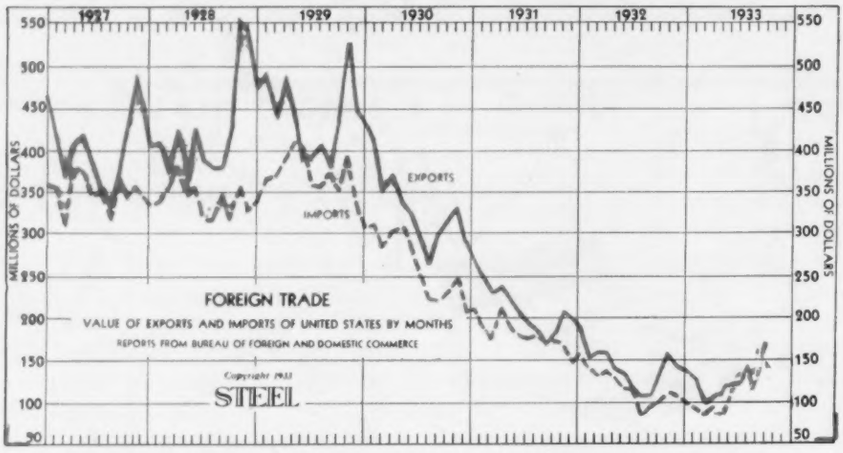
Divorced from the threat or promise of government influence, the outlook for industrial activity is slightly brighter today than it was a week ago. Here and there a few long held up equipment orders are being placed. Agricultural implement business is a shade better. Automobile production, delayed by strike trouble, will show improvement before long. Electric power output in the week ending Oct. 28 turned upward after declining for several weeks. Car loadings for that week promise to equal or exceed those of the previous week.

Meanwhile steel operations are continuing to decline. The important question is when will the present slowly developing demand expand sufficienty to turn the trend of ingot output?.



1933	
Sept.	84
Aug.	91
July	100
June	91

1932	
Sept.	66
Aug.	60
July	58
June	59



Exports	
September, 1933	$160,000,000
August, 1933	131,465,000
September, 1932	132,037,000

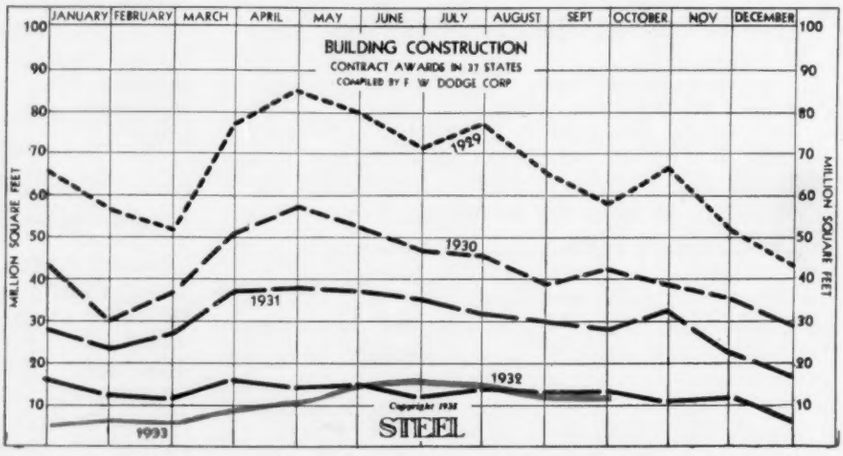
Imports	
September, 1933	$147,000,000
August, 1933	154,981,000
September, 1932	98,411,000

Favorable Trade Balance Regained As Exports Rise

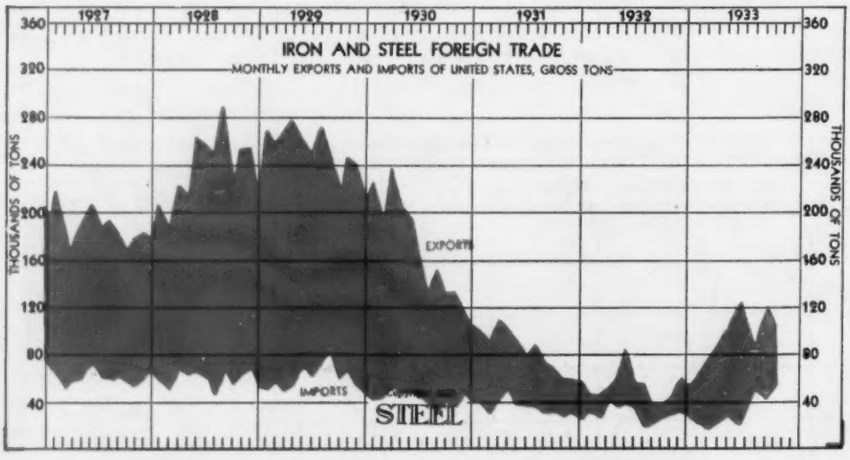
A favorable trade balance again appears in the September report of this country's foreign merchandise trade. The total value of goods exported in September was $160,000,000 while imports declined slightly to $147,000,000. In contrast with the statement for the preceding month, when imports exceeded exports by nearly $24,000,000, the September report shows a favorable balance of $13,000,000. However, the increase in the value of exports for September was wholly in shipments of cotton.

September Building Activity Continues at Low Ebb

The trend of building construction in September remained virtually unchanged from the preceding month. According to the report of the F. W. Dodge Corp., building awards as measured in new floor space in 37 eastern states totaled 13,365,400 square feet, a rise of only 363,200 square feet over August. In September, a year ago, awards totaled 13,513,900 square feet. The valuation of construction contracts in September at $122,615,700 advanced almost 16 per cent over the August total and compares with $127,526,700 in September, 1932.



Square Feet	
September, 1933	13,365,400
August, 1933	13,002,200
September, 1932	13,513,900



Exports	Tons
September, 1933	108,799
August, 1933	119,374
September, 1932	36,038

Imports	Tons
September, 1933	55,706
August, 1933	46,839
September, 1932	29,241

Steel Exports Fall; Imports Highest in 4 Years

This country's export trade in iron and steel products during September declined 10,575 gross tons from the preceding month, for a total of 108,799 tons. In September, a year ago, shipments of iron and steel products totaled 36,038 tons. Imports during the month amounted to 55,760 tons compared with 46,839 tons in August and 29,241 tons in September last year. Imports in September were higher than for any month since October, 1929.

Overheating Is Problem in Motors for Fast Reversing Service

BY O. G. RUTEMILLER

Machine Tool Engineer
Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

MOTORS used on machine tools having a fast reversing cycle, such as drilling and tapping machines, planers and the like, are extremely difficult to protect from excessive overheating. Any one, or any combination of the following conditions may result in damaging motor temperatures, and yet conventional overload protection may not prevent the motor from burning up: Increase in the number of cycles per minute; increase in motor load during the working portion of a cycle; an increase of room temperature; failure of ventilation; and decrease in line voltage. It is pertinent to consider the effect of each of these factors individually.

Motors for fast reversing service are designed to operate through a certain maximum number of cycles per minute. In such service by far the greatest part of motor heating is caused by the starting and plugging current drawn by the motor during the time it is being retarded from full speed in one direction to zero speed and accelerated to full speed in the reverse direction. It is possible by a change in the nature of the work, such as a change in the depth of tapping, to reduce the time per cycle and consequently increase the number of cycles per minute. Thus, the root mean square current of the motor, a measure of the heating, is increased.

Fig. 3 shows the effect of an increase in the number of cycles per minute. In a normal cycle, the motor temperature increases due to the effect of the starting and plugging current, during the time when the current is normal and then cools down so that the temperature does not exceed a safe value during the next starting and plugging peak. Now, during a faster cycle the motor temperature does not increase to as high a value on the first cycle, since the load does not exist as long. However, the motor does not have sufficient time to reduce its temperature appreciably during the running period and the repeated reversals cause an accumulation of heat within the motor which soon reaches an unsafe temperature.

Similarly to speeding up the cycle, an increase in load may be detrimental. Probably the most prolific cause of increased load is dulling of the cutting tool. After many operations the cutting edge on a tap becomes worn and dull and it requires more power to accomplish the same operation. Also, on automatic lathes and similar machines, the cutter dulls after a number of operations and the power required during the working portion of the cycle increases, as shown in Fig. 4. It will be noted that the length of time per cycle remains constant throughout this curve, although the working portion of the cycle requires more power. In this case the motor temperature rises to a higher peak during each cycle, does not drop sufficiently before the next reversing peak occurs, and therefore reaches an unsafe height rapidly.

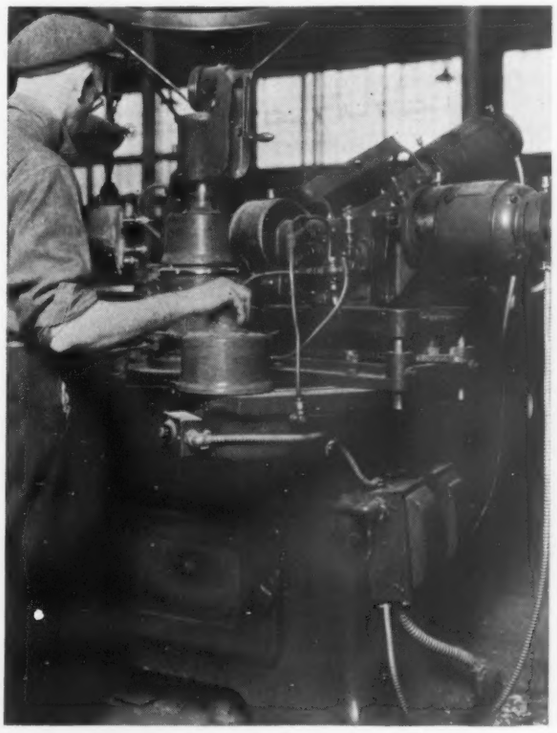


Fig. 1—Tapping machines are typical of machine tools the motors of which need complete protection against overheating

Most motors built for a fast reversing cycle are designed to operate at 55 degrees Cent. temperature rise, leaving a narrow margin between the maximum motor temperature and the safe operating temperature above which insulation deterioration begins. As a result, a smaller margin is allowable for changes in ambient temperature, and hence motors located in places where a high room temperature may obtain are

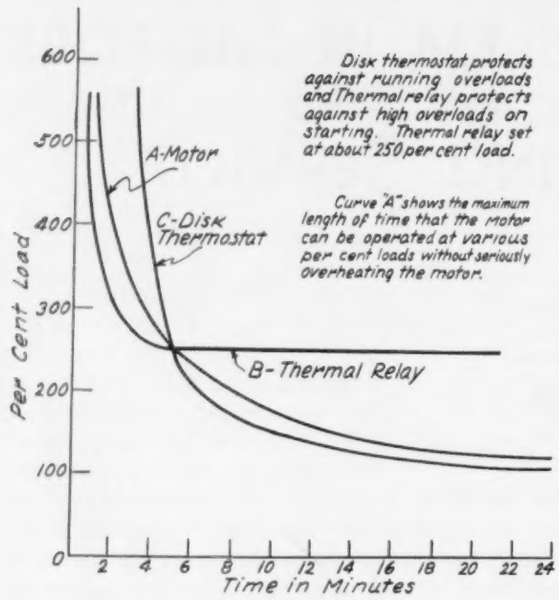

Disk thermostat protects against running overloads and Thermal relay protects against high overloads on starting. Thermal relay set at about 250 per cent load.
Curve "A" shows the maximum length of time that the motor can be operated at various per cent loads without seriously overheating the motor.
A-Motor
C-Disk Thermostat
B-Thermal Relay
Per Cent Load
600
500
400
300
200
100
0
2 4 6 8 10 12 14 16 18 20 22 24
Time in Minutes

FIG. 2 — Typical operating curves indicating how complete thermal protection of the motor is obtained by a combination of thermostat and thermal relay

particularly susceptible to failure from overheating. Ambient temperature effect is shown in the chart, Fig. 5.

Ventilation is another important consideration. In many cases these motors are provided with forced ventilation supplied by a separate ventilating motor. Motors not provided with this means of positive ventilation often are installed in housings designed to permit the passage of as much air as possible through the motor while in operation. On any of these motors, whether self-ventilated or separately ventilated, failure of the ventilating system would be disastrous. In a separately ventilated unit this may occur by failure of the motor driving the ventilating fan. In a self-ventilated motor this may occur by obstruction of the ventilating opening, either by an accumulation of dust or by materials carelessly piled over the vents.

Effect of a decrease in line voltage is somewhat similar to the effect of an increase in load during the working portion of the cycle. Even though the starting and plugging current is reduced because of the lower line voltage, the running current during the working portion of the cycle is increased because the machine requires a constant horsepower for its operation and since horsepower is equivalent to the product of current and voltage, a reduction in voltage necessarily infers an increase in current. This has the effect of increasing the root mean square current and hence the motor temperature.

Up to the present time the thermal overload relay has been the best known type of overload protection. This relay has thermal characteristics which approximate the heating of an average motor. In other words, the temperature of the relay increases in proportion to current and time as does the motor. However, motors vary greatly in physical size and rating. Even a motor of a given physical size will have several different ratings and its full load current will vary accordingly; which means that it is difficult to design a thermal relay giving adequate protection to all motors.

The thermal relay usually is set to trip before the motor approches an unsafe temperature; however, due to the difference between the thermal characteristcs of the relay and the motor, in many applications the relay must be selected oversize.

In motors designed for frequent reversal the thermal relay does not provide adequate protection because it must be selected with sufficient capacity to allow for the frequent starting peaks, and the relay will cool off more quickly than the motor. On frequent repeated overloads such as would occur due to the increase of load during the working portion of the cycle, or a decrease in line voltage, the motor may reach an unsafe temperature without the thermal relay tripping.

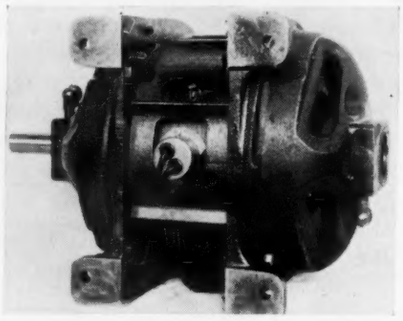
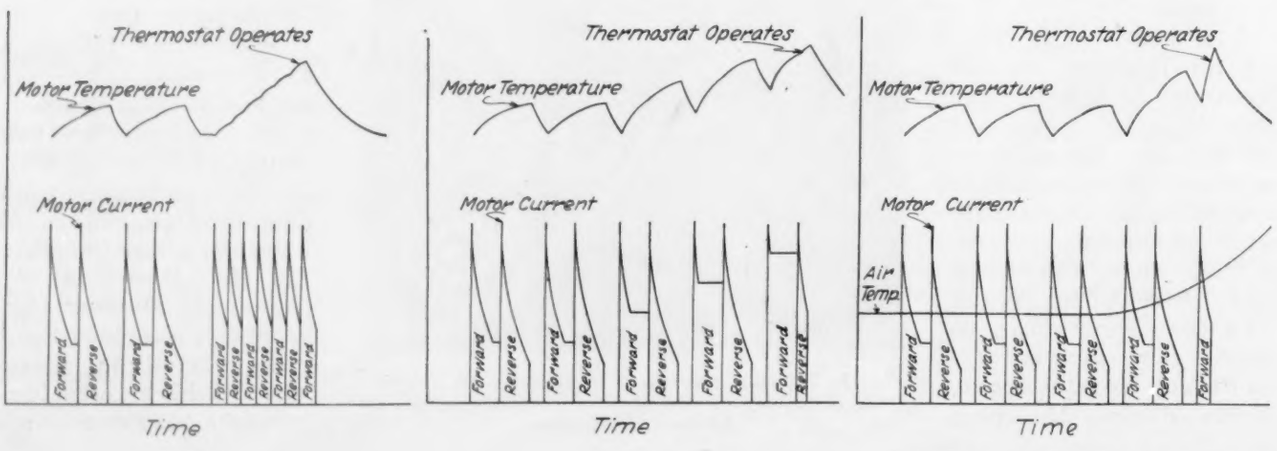


Fig. 6—Showing how theremostat is attached to stator laminations of induction motor as protection against operating at damaging temperature

The thermal relay, being an external device, cannot protect the motor in case of failure of ventilation nor can it protect the motor in case of increased room temperature unless the ambient temperature of the relay also is increased in direct proportion.

To protect adequately motors for frequent starting and reversing serv-

THREE charts indicating effects of various factors upon temperatures of motors in fast reversing service. Fig. 3 (left)—Effect of increasing the number of cycles per minute. Fig. 4 (center)—Effect of tools becoming dull. Fig. 5 (right)—Effect of ambient temperature opon safe operating load



ice a thermostat of the quick make and quick break type is attached to the motor, as shown in Fig. 6. This thermostat may be arranged to stop the machine when its motor reaches an unsafe temperature or its contacts may be arranged to actuate a signal light or bell. The thermostat on the motor, in conjunction with the usual thermal relay, provides complete protection against all causes of overheating, failure to start or stalled load conditions. In the use of thermostats alone for motor protection it must be remembered that there are conditions with which the thermostat cannot cope; for example, failure of the motor to start.

18-Foot Welded Steel Sphere Serves As Boulder Trap on New Dredge

FABRICATION of a unique, 18-foot diameter, butt-welded steel sphere, to function as a boulder trap on the suction line of a large dredge for Cape Cod canal, has just been completed by the Graver Tank & Mfg. Co., East Chicago, Ind. This sphere, shown in the accompanying illustration, is of heavy plate construction, formed to accurate dimensions, and operates under a vacuum of 15 pounds per square inch.

Unique from the standpoint of both design and operation, the device is installed in the bottom of a large sea-going dredge with the trapdoor at the bottom of the ball opening through the hull of the boat directly into the ocean. At the upper portion of the ball is a fully reinforced 5-foot diameter sphere which acts as the intake and outlet attachment for the regular dredge line. This smaller sphere contains a large grille or grizzly which serves to separate from the incoming stream of dredge material all boulders and other objects of a size too great to be passed by the sump on the dredge proper.

In operation, the stream of incoming dredge materials from the cutter head is drawn through this smaller sphere where the bulky materials are screened out and dropped into the main ball below. When the accumulation is sufficient to fill the large sphere, the vessel is disconnected from the dredge line, run out into deep water where the trapdoor is dropped and the load of boulders dumped into the sea.

The shell plates in the main sphere are 1¼ inches thick and the total weight of the unit is 31 tons. Considerable skill was required in forming the segments and in welding them together, for the stresses set up in welding were sufficient to cause distortion unless unusual precautions were taken. Because of the large size of the sphere, it was necessary to fabricate all of the units in the shop and to deliver them to the shipyard for final assembly.

Welding of the various sections was performed by the shielded arc process, using equipment manufactured by the Lincoln Electric Co., Cleveland.

THIS 18-foot steel sphere, weighing 31 tons, is constructed of 1¼-inch plates joined by butt welding. It is installed in the bottom of a sea-going dredge and serves as a trap for boulders

Offers Data on Bearings

Description of various types of standard Medart-Timken bearing applications, as well as load ratings, specifications, dimensions and other informaton useful in the proper selection and application of antifriction bearings for machinery applications, power transmission and material handling service, are contained in a 20-page looseleaf booklet issued by the Medart Co., St. Louis, titled the Medart-Timken Engineering Journal. Copies will be sent upon request to the company.

All Steel Skyscrapers Are Not Lightning Proof

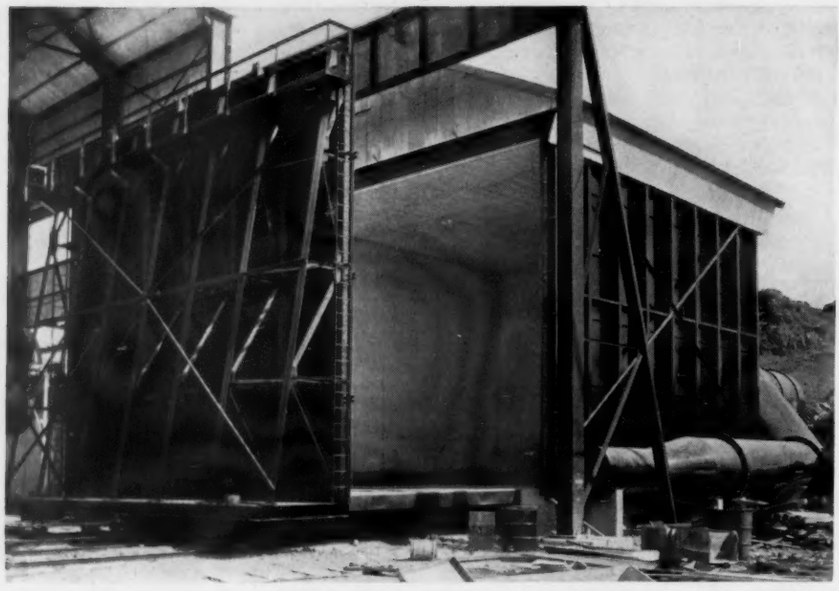
Installation of a modern lightning rod system on the General Electric building, Lexington avenue and Fifty-first street, New York, has been completed, thus the structure offers engineers of the General Electric Co. a new opportunity to observe the pranks of natural lightning as it plays over the city during storms.

Raising its tower nearly 1000 feet in the air, this 48-story office building will be safe and, at the same time, will give a certain amount of protection to nearby lower structures. Investigations of engineers in the laboratory at Pittsfield, Mass., have indicated this to be true. A low lightning rod is particularly effective in this respect in proportion to its height. A rod 100 feet high will protect a flat area surrounding it for a distance of approximately 400 feet from the base of the rod when the storm cloud is not lower than 1000 feet. A 500-foot rod will protect a distance of approximately 650 feet; a 1000-foot rod will protect a distance of at least 1000 feet.

Protected Zone a Cone

Structures within such protected areas should not project their uppermost points through the imaginary cone drawn around the protecting rod, the apex of the cone being at the upper extremity of the rod and the base having a radius equal to the distance protected at ground level.

That all steel skyscrapers erected today are not automatically made lightning proof by their steel frame is indicated by performance of this particular structure before the General Electric Co. became its owner and installed lightning rods. During storms this building had been struck three times. The steelwork had not been carried to the upper extremity of the tower, but was capped by more than 50 feet of brick and terra cotta with nongrounded reinforcing members. Lightning strokes seeking the path of least resistance passed through portions of the masonry and tore away blocks of terra cotta and brick. By providing metal paths, future damage of this nature will be effectively prevented.



Stress relieving furnace at field pipe fabricating plant at Boulder dam, with car-mounted door partly open. Furnace volume is 42,800 cubic feet

Stress Relieving Furnace Handles 35-Foot Pipes

FOR stress relieving large fusion welded steel pipes to be used in hydraulic-power and outlet-works tunnels at Boulder dam, a new and unusual furnace has been built by the Rust Engineering Co., Pittsburgh, at the field fabricating plant of the Babcock & Wilcox Co., a short distance from the site of the dam.

Pipe handled in the furnace varies from 8½ feet in diameter by 35 feet long with ⅞-inch wall thickness, to 30 feet in diameter by 24 feet long with 2¾-inch wall thickness. The furnace, shown in accompanying illustrations, has been in successful operation since May 1.

Door Mounted on Car

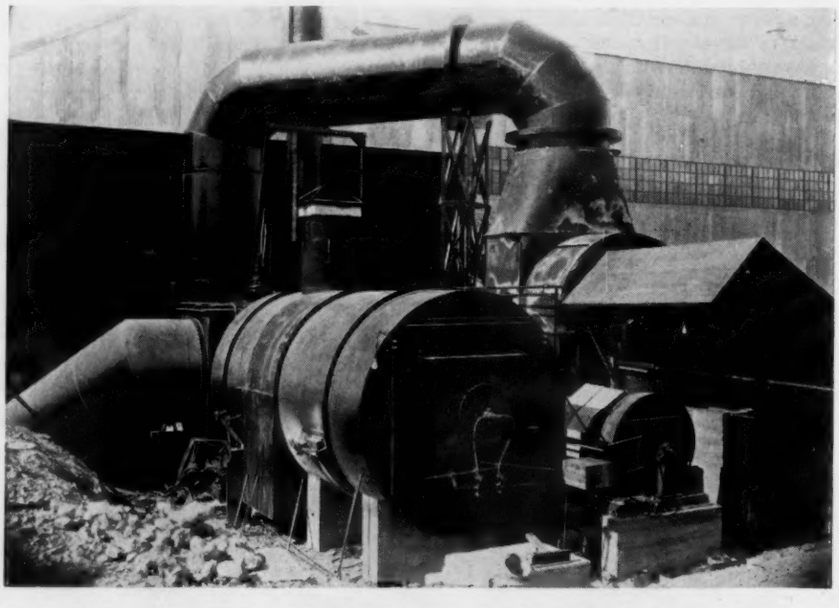
The structure is of the car-bottom type, with the door constructed integrally with the car. It is 36 feet wide inside by 41 feet long and 29 feet from the top of the car to the roof, furnace volume being 42,800 cubic feet.

Interior of the furnace and recirculation flues are lined with Babcock & Wilcox insulating firebrick, 4½ inches thick for all walls and flues, and 9 inches thick for the roof. The material is claimed to provide high insulating value and minimum heat storage.

An unusual feature of the furnace is the method of heating, which employs the principle of reversing circulation—said to be the first use of this principle for this type of work. The fuel, oil, is burned in a combustion chamber located entirely outside the furnace, in which the fresh products of combustion are intimately mixed with the cooled waste gases returning from the furnace.

The amount of oil burned is regulated by a single point of temperature control located beyond the combustion chamber, so that a uniform predetermined temperature is maintained in the heated waste gases returning to the furnace. The recirculation fan has a capacity of 65,000 cubic feet of gases per minute, at a temperature of 1300 degrees Fahr., so that the furnace atmosphere is changed at 40-second intervals. The path of the gases through the furnace is changed at frequent intervals by means of an electrically operated reversing valve located beyond the combustion chamber. This reversal of the heating medium is said to permit much more rapid heating, and to prevent wide variations which are difficult to avoid in heating the irregularly shaped sections.

Largest pipe sections weigh approximately 150 tons and are heated from cold to a temperature of 1200 degrees Fahr. in 6 hours. Maximum allowable temperature variation at any time during the heating cycle is plus or minus 20 degrees.



Combustion system used with the furnace, showing the single oil burner and the large high-temperature recirculating fan

Tube Concentricty Shown by Test

TO DEMONSTRATE effectiveness of the Diescher process (STEEL, Feb. 13, p. 17) for producing steel tubes of uniform wall thickness, the Babcock & Wilcox Tube Co., Beaver Falls, Pa., first producer licensed by Diescher Tube Mills Inc., Pittsburgh, to make this tubing, recently conducted an interesting test.

Briefly the tubemaking process involves the insertion of a mandrel bar into a pierced hollow round before it enters an elongator, where it is re-

DIRECT EVIDENCE OF INCREASED MACHINABILITY

J&L *Improved* BESSEMER SCREW STEEL

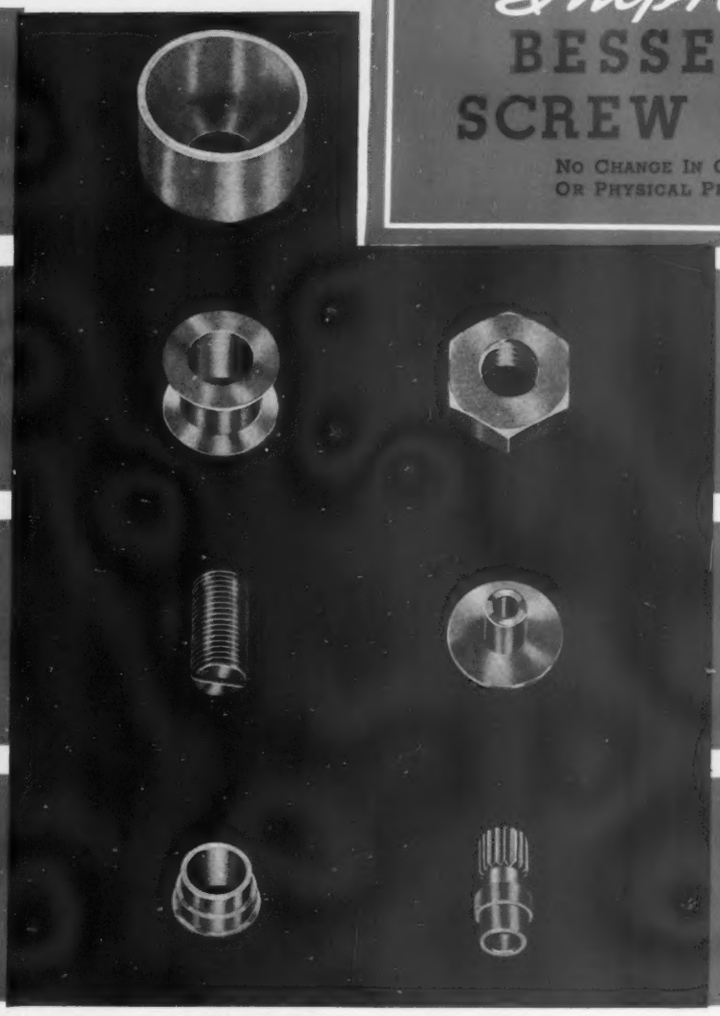
NO CHANGE IN CHEMISTRY OR PHYSICAL PROPERTIES

60% PRODUCTION INCREASE
1⅛" Round, Cold Drawn
J&L *Improved* Special High Sulphur Bessemer Screw Steel

42.8% PRODUCTION INCREASE
¾" Round, Cold Drawn
J&L *Improved*, S.A.E. 1112

10% PRODUCTION INCREASE
⅝" Round, Cold Drawn
J&L *Improved* S.A.E. 1112

50% PRODUCTION INCREASE
$\frac{5}{16}$" Round, Cold Drawn
J&L *Improved* Special High Sulphur Bessemer Screw Steel



20% LONGER TOOL LIFE
¾" Hexagon, Cold Drawn
J&L *Improved* S.A.E. 1112

33% PRODUCTION INCREASE
⅝" Round, Cold Drawn
J&L *Improved* S.A.E. 1112

11% PRODUCTION INCREASE
⅝" Round, Cold Drawn
J&L *Improved* Special High Sulphur Bessemer Screw Steel

These production increases resulted from: longer tool life, greater cutting speed or increase in feed, made possible by the radically improved machining quality of J&L *Improved* Bessemer Screw Steel. Improved appearance, too, was obtained. This increased machinability is found in both S.A.E. 1112 and J&L Special High Sulphur Bessemer Screw Steel, in hot rolled bars, cold finished bars, and drawn wire. Write for descriptive bulletin.

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

Sales Offices: Atlanta Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit Erie Los Angeles Memphis Milwaukee Minneapolis New Orleans New York Philadelphia Pittsburgh St. Louis San Francisco
Warehouses: CHICAGO CINCINNATI DETROIT MEMPHIS NEW ORLEANS PITTSBURGH
Canadian Representatives: JONES & LAUGHLIN STEEL PRODUCTS COMPANY, Pittsburgh, Pa., U. S. A., and Toronto, Ont., Canada

volved between two inclined cross-rolls that squeeze the sides of the hollow against the mandrel as the tube is propelled forward. This action reduces the wall to the desired thickness.

That the action of the elongator in producing concentricity actually compensates for inequalities in the wall thickness of a hollow has been demonstrated by the above-mentioned test, performed with a special hollow in which a hole was drilled off center in a round. Eccentricity of this hole was considerably greater than that which could ever occur in the normal piercing operation. This specially drilled round was then entered in the elongator in the usual way; when it was about half elongated, the operation was stopped and the partly finished tube removed for inspection.

Before elongation, walls of the round varied in thickness from 0.120 to 0.358 inch. Wall thickness of the finished tube varied only from 0.095 to 0.104 inch. Thus the elongator reduced the variation in wall thickness from 0.238 inch to 0.009 inch. This difference in disposition of the metal was overcome, it is claimed, without causing laps, seams or other defects in the experimental tube at the finished end.

Behavior of Steel at Low and High Temperatures Is Scrutinized

CONSIDERABLE interest attaches to the properties of steels at low temperatures for there exist numerous commercial applications in which extremely low temperatures impose severe requirements, notably in handling liquefied gases, dewaxing oils, refrigeration, railroad trackage and use of automobiles and aircraft. In most cases, static properties of steels are not altered seriously, but impact strength generally is lowered to such an extent as to render many steels unsuitable.

A research investigating this subject was undertaken by John J. Egan, Walter Crafts and A. B. Kinzel, Union Carbide & Carbon Research Laboratories Inc., Long Island City, N. Y., and the results were reported before the American Society for Steel Treating at its annual convention in Detroit, Oct. 2-6. The investigation was limited to plain carbon steels, common S.A.E. steels and certain special analysis steels, all in the normalized or as-rolled condition.

Impact Strength Lessens

Results indicated that, in general, normalized low alloy steels should not be used at temperatures below about -150 degrees Fahr., for engineering or chemical manufacturing purposes where substantial impact strength is required. Normalized pearlitic alloy steels of the 18-8 chrome-nickel class are well adapted to most demands. Carbon steel and some alloy steels showed erratic behavior.

Properties of many of the normalized low alloy steels were improved with certain alloy additions. This was not true of the plain carbon steels. The influence of zirconium and vanadium was found to increase in proportion to the alloy content, effective improvement being obtained at 0.50 to 1.00 per cent. In the case of chromium, molybdenum, nickel, copper, and manganese, no direct relation appeared to exist between alloy content and improvement.

Although in general the low alloy normalized steels under the best conditions do not appear suitable for use in engineering applications below -150 degrees Fahr., many of them have sufficiently good impact resistance to make them suitable at -110 degrees Fahr. If the limiting impact strength be raised slightly, then several additional steels, including nickel-vanadium, nickel-copper, chrome-manganese-silicon, chrome-copper, zirconium and vanadium, would be satisfactory for use at this low temperature.

More Become Suitable

According to the investigation, a slightly different listing ensues when properties at -60 degrees are considered, this being taken as the limiting low temperature for service under atmospheric conditions. All the steels listed at -110 degrees Fahr. are satisfactory, of course, and, in addition, 3 per cent chromium, chromium-vanadium, nickel-molybdenum, and plain molybdenum steels might be included. Carbon steels, in general, are not satisfactory below +5 degrees Fahr., where good resistance to impact is necessary, and may well be unsuitable at temperatures in the neighborhood of +32 degrees Fahr.

Steels subjected to elevated temperature service were also discussed at the same session. In an investigation reported upon by A. E. White, director of the department of engineering research, and C. L. Clark, research engineer of the same department, University of Michigan, Ann Arbor, Mich., an effort was made to compare single-step long-time creep results with Hatfield's "time-yield" stress.

In his Campbell memorial lecture before the American Society for Steel Treating in 1928 and upon subsequent occasions, Dr. W. H. Hatfield, director, Brown-Firth Research Laboratories, Sheffield, England, recommended his "time-yield" stress as follows: "The method . . . consists in discovering, by static loading, the stress within which, at the temperature, stability of dimensions is attained within a period of 24 hours for a further period of 48 hours with an extension not exceeding the elastic deformation by 0.5 per cent on the gage length, with limits as regards measurement for permanence of dimensions to 0.01 per cent of the gage length."

Later Dr. Hatfield changed the last clause in the definition to read ". . . . and with limits as regards measurement for permanence of dimensions of the order of one millionth of an inch per inch per hour." By correspondence with Dr. Hatfield, Prof. White and Mr. Clark concluded that his time-yield may be determined as the stress which will produce an extension of 48 millionths of an inch per inch of test section between the 24th and 72nd hour of load application.

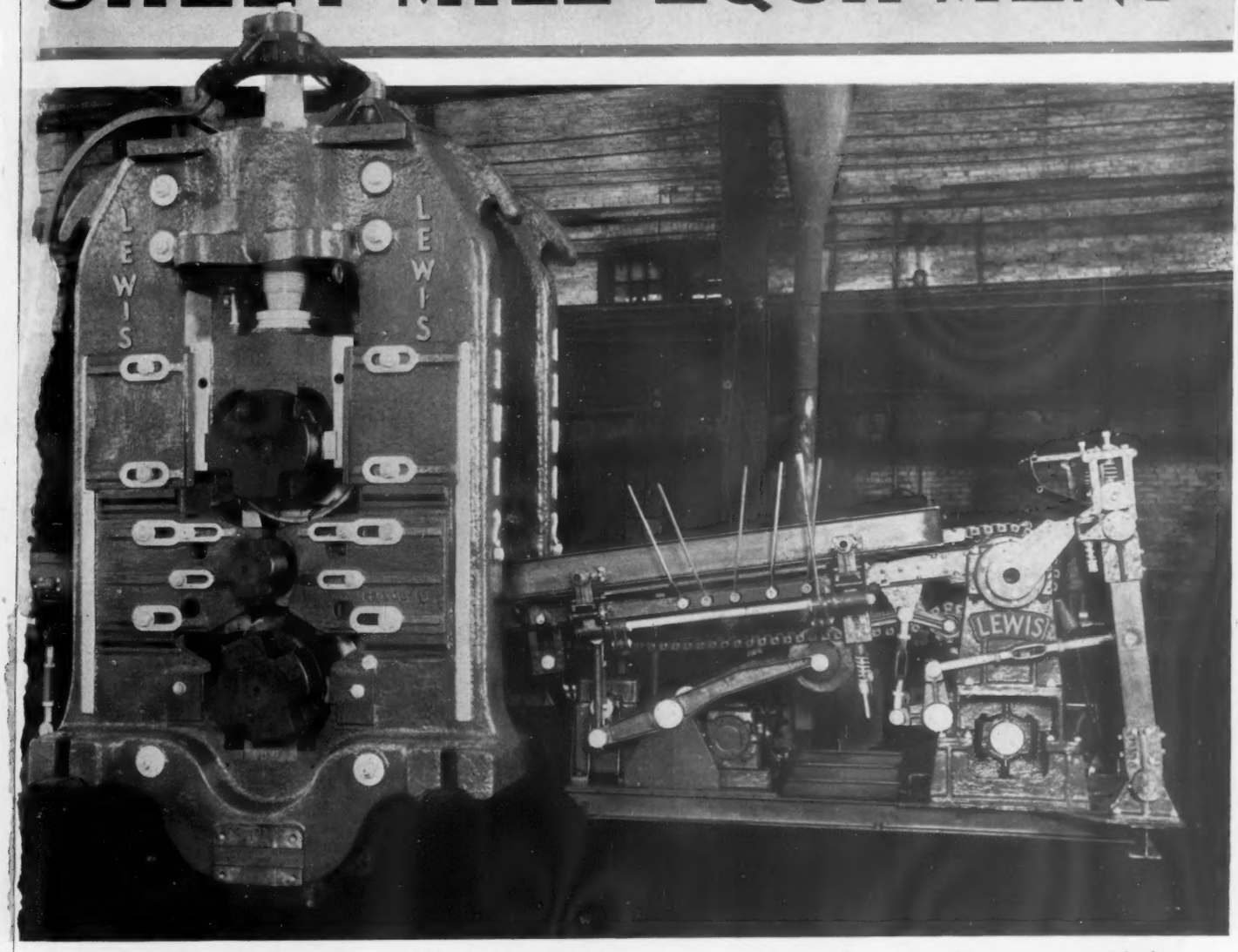
Relationship Is Sought

For the purpose of throwing further light on the possibilities of this method, a number of steels of different composition and heat treatment were subjected to both the standard creep test and tests to determine time-yield. It was hoped that a definite relationship between the values obtained by the two methods would be secured. Beyond question, there is a trend toward such a relationship, but the variations in the two methods are sufficiently great to force engineers seeking relationships with but small percentage variations to conclude that, at least under the conditions of this comparative test, relationships do not exist.

As a result of their tests, the authors concluded that the relationship of creep stress to Hatfield's time-yield varies, depending upon composition and temperature. It was further concluded that even though the time-yield test does not give values which can be directly converted into actual creep data, it is a method which has possibilities as a relatively rapid qualitative test for the determination of the creep characteristics of ferrous metals, especially in the case of steels of given type at given temperature.

ADVERTISING PAGES REMOVED

THE LATEST DESIGN IN SHEET MILL EQUIPMENT



Lewis Three High Mills are simple and accessible. All gears and moving parts are wholly enclosed and run in oil. They are roller bearing equipped throughout. Automatic and semi automatic screwdown and feeder and catcher tables furnished on specification.

& MACHINE CO. P. O. BOX 1591 PITTSBURGH, PA.

Electric Furnace Is Retired After 15 Years of Service

WITH the installation of a new 3½-ton electric furnace by the Sivyer Steel Casting Co., Milwaukee, the unit which it replaces, the first of its kind in the world, has been erected as a permanent monument on the grounds of the Lakeside power plant of the Milwaukee Electric Railway & Light Co., which developed and built the furnace in 1917 under patents and engineering direction of W. E. Moore, Pittsburgh 'Lectromelt Furnace Corp., Pittsburgh.

The first heat was melted in the old furnace on Dec. 18, 1917. During its 15 years of operation it made 32,844 heats, representing 111,438 tons, and with the exception of a time in 1921, averaged 18 to 20 hours a day. A considerable portion of the entire tonnage melted was special carbon and alloy steel and in many months at least 70 per cent of the output consisted of such steels. At the present time, the company makes 27 distinct compositions of alloy steels, in addition to several varieties of corrosion and heat-resisting steels.

A cast steel tombstone, poured from the last heat, has been attached to the furnace, as shown in the accompanying illustration. Chemically, the heat was of the manganese-nickel grade having a carbon content of 0.35, manganese 1.10 and nickel 0.81 per cent. In the normalized and drawn condition, it had a yield point of 55,000 pounds per square inch, a tensile strength of 89,000 pounds per square inch, 29 per cent elongation and 55.7 per cent reduction of area.

Charge at Top in New Unit

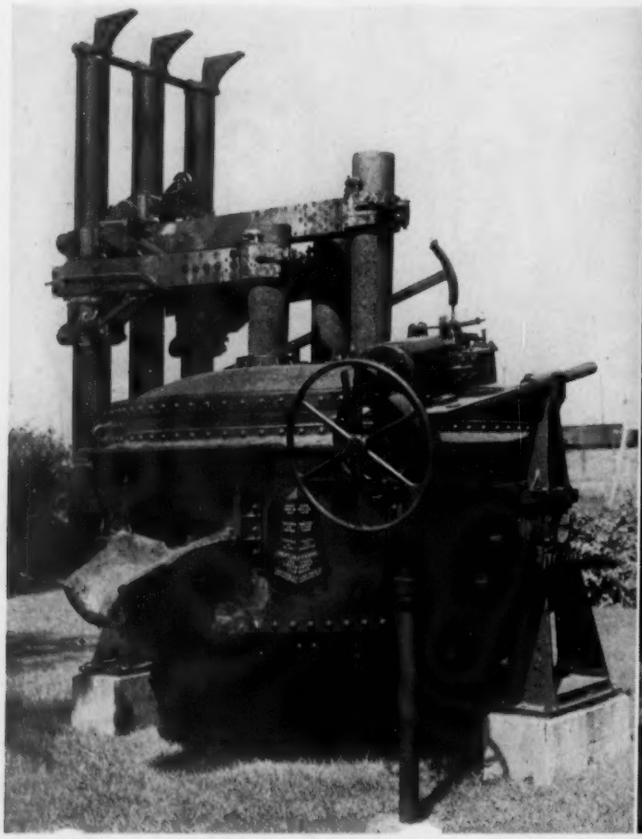
Notable among improvements in the new furnace, built and installed by the Pittsburgh 'Lectromelt Furnace Corp., and also shown in an accompanying illustration, is a provision for more efficient charging of scrap. It was necessary to charge the old unit through the furnace door, the scrap being placed in scoops 4 to 7 feet long and charged one at a time.

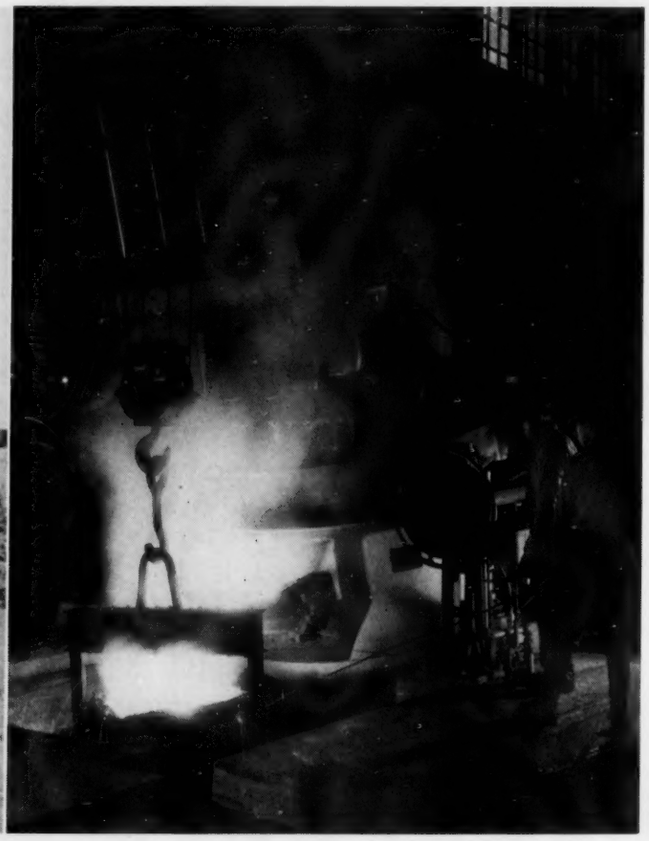
To charge the new unit, the roof and superstructure are lifted from the body and swung sidewise 90 degrees by a hydraulic pressure system. This permits the entire charge of 3½ tons to be dumped by a drop-bottom bucket into the furnace at one time. This, it is said, not only lessens labor and exposure of the workers to heat, but conserves current and refractories and reduces elapsed time between heats considerably. The top-charge furnace, operating with the same substation as the old one, makes five heats in the same time previously consumed in four.

The new unit is supplemented by a ½-ton furnace to take care of small rush orders and by additional heat treating facilities for hardening and toughening the alloy steels made.

Institute Plans Activities

Program of activities for 1933-34 for the British Institute of Metals has been announced by G. Shaw Scott, secretary, 36 Victoria street, Westminster, London. Three general meetings will be held—on March 7-8, May 9 and in September. At the May 9 meeting, the twenty-fourth annual May lecture will be heard.

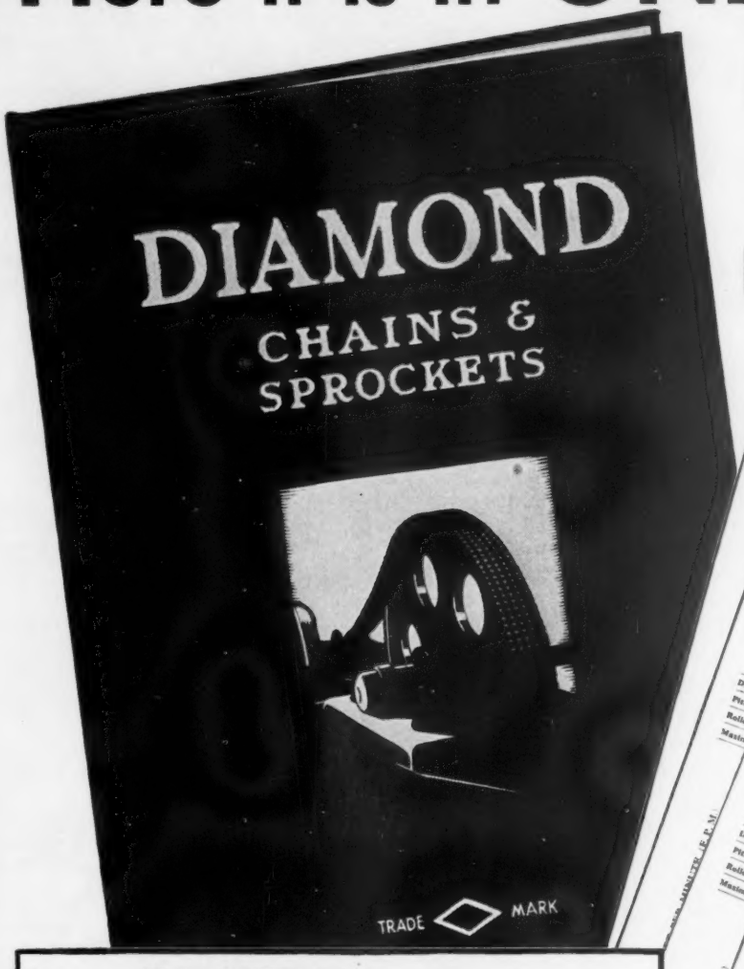


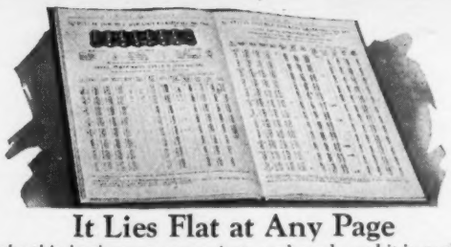


(Left)—In 15 years this furnace made 32,844 heats totaling 111,438 tons, a considerable portion of which was special carbon and alloy steel. With a suitable tombstone, it now stands as a monument to electric melting. (Right)—Provision for efficient charging of scrap is a feature of the new furnace. Roof and superstructure are lifted from the body and swung to the left, permitting the 3½-ton charge to be dumped in by a bucket

Here it is in ONE BOOK . . .

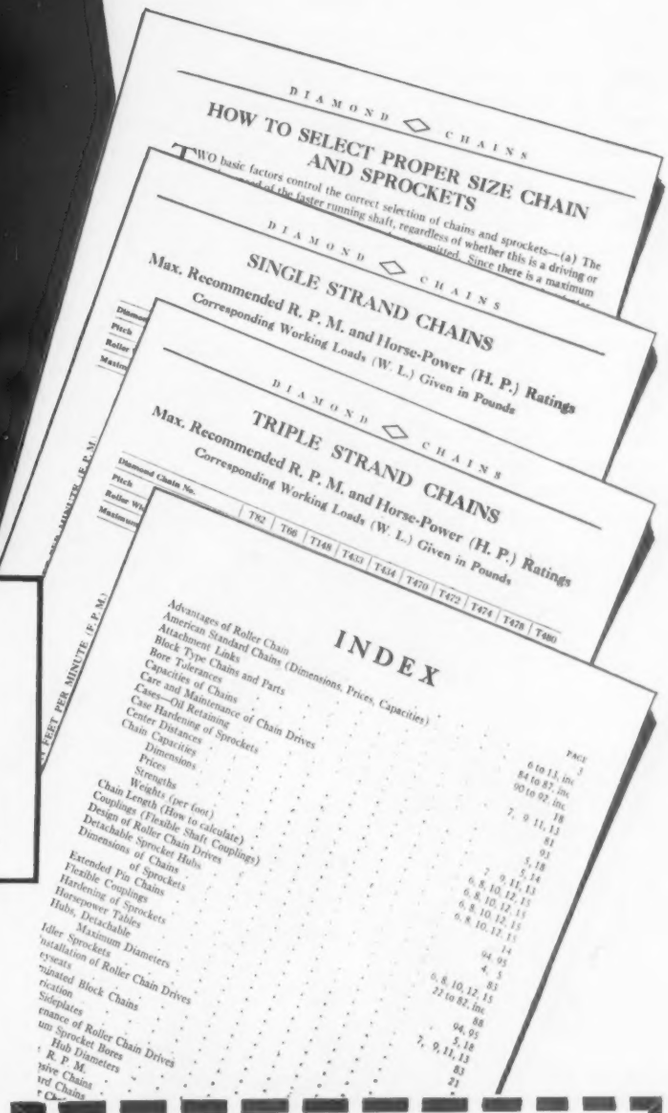
Every Fact for Solving Your Drive Problems





It Lies Flat at Any Page

To make this book more convenient, we have bound it in such a way that there is no "fighting of pages". It lies flat at any page.


DIAMOND CHAINS
HOW TO SELECT PROPER SIZE CHAIN AND SPROCKETS
DIAMOND CHAINS
SINGLE STRAND CHAINS
Max. Recommended R. P. M. and Horse-Power (H. P.) Ratings
Corresponding Working Loads (W. L.) Given in Pounds
DIAMOND CHAINS
TRIPLE STRAND CHAINS
Max. Recommended R. P. M. and Horse-Power (H. P.) Ratings
Corresponding Working Loads (W. L.) Given in Pounds
INDEX

THESE few sample pages indicate the completeness of this new Diamond Chain Drive "encyclopedia". Whether your problem is driving machines from a line-shaft—driving from individual motors—driving or coordinating units of a machine—transmitting many horsepower or a few, over short centers or long, at high speeds or low—you will find the answer here. Fill out and mail coupon now for your copy.

DIAMOND CHAIN & MFG. CO.
455 Kentucky Ave., Indianapolis, Ind.
Offices and Distributors in All Principal Cities

DIAMOND CHAIN & MFG. CO.
455 Kentucky Ave., Indianapolis, Ind.
Gentlemen: Please mail your new Catalog No. 583 on Diamond Chains and Sprockets.

Name.....

Address.....

City..... *State*.....

(A-7525)

The Plastic Forming Of Metals

By PROFESSOR DR.-ING. ERICH SIEBEL
Translated by JOHN H. HITCHCOCK

Part I—Laws and Fundamentals of Plastic Forming

3. Deformability of Metals

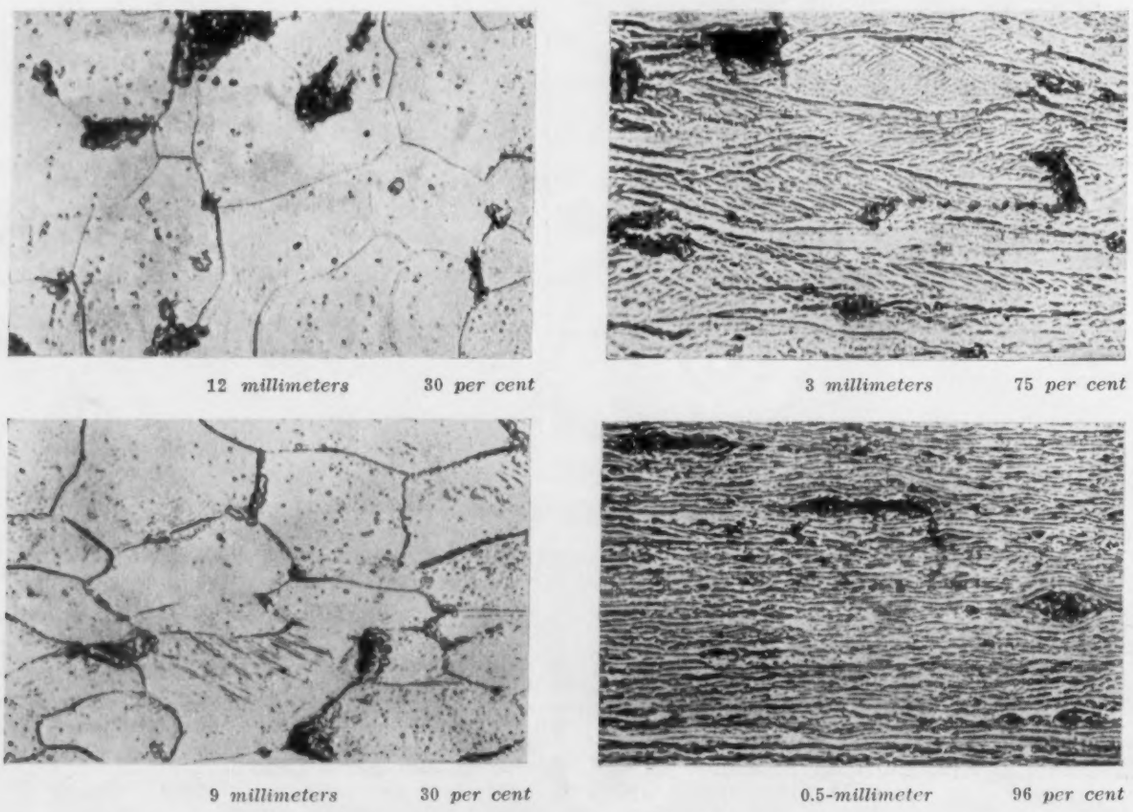
DEFORMABILITY of a metal is affected to a great extent by the temperature at which forming is carried on. At low temperatures and after deformation, individual crystals retain the distortion corresponding to the deformation of the entire body, the deformation resistance increases with increasing deformation, and a work-hardening of the material occurs. On the other hand, if the deformation temperature is raised above the recrystallization temperature of the metal in question, then the structure assumes its original form either during the deformation or within a finite time thereafter, and the original value of strength is restored. Inasmuch as the occurrence or nonoccurrence of recrystallization has a fundamental influence upon the consequent behavior of the metal during forming, a distinction must be made between deformations below and those carried out above the recrystallization temperature. The former are designated as cold-working and the latter as hot-working. The temperature of recrystallization, however, depends upon the extent of the deformation, so that a distinct separation between cold-working and hot-working is not always possible.

Cold-working is characterized by a permanent distortion of the grains which compose the structure, as shown in Fig. 8. If the structure is homogeneous, each individual grain is deformed in practically the same way. If the structure is composed of constituents of different kinds, the harder constituent frequently remains undeformed or becomes broken, while the softer constituent undergoes a relatively greater deformation. With a suitable structure, certain heterogeneous alloys can possess satisfactory capacity for forming, as is the case with spheroidal cementite in a ferritic matrix.

How Curves Were Plotted

If the deformation strength of various metals, determined experimentally, is plotted as a function of the deformation ϕ or the change of cross sectional area q, as in Figs. 9 and 10; so-called flow curves are obtained which rise with increasing deformation, and the slope of which indicates the increase of strength, or work-hardening, of the material in question. The flow curves can be dissimilar; mild steel, for instance, has a pronounced yield point which does not exist in the case of the nonferrous metal, copper.

The deformation strength of alloys is greater than that of the corresponding pure metals. A particularly marked rise of the flow curves is observed in the case of alloys which form compound crystals, such as



12 *millimeters* 30 *per cent* 3 *millimeters* 75 *per cent*

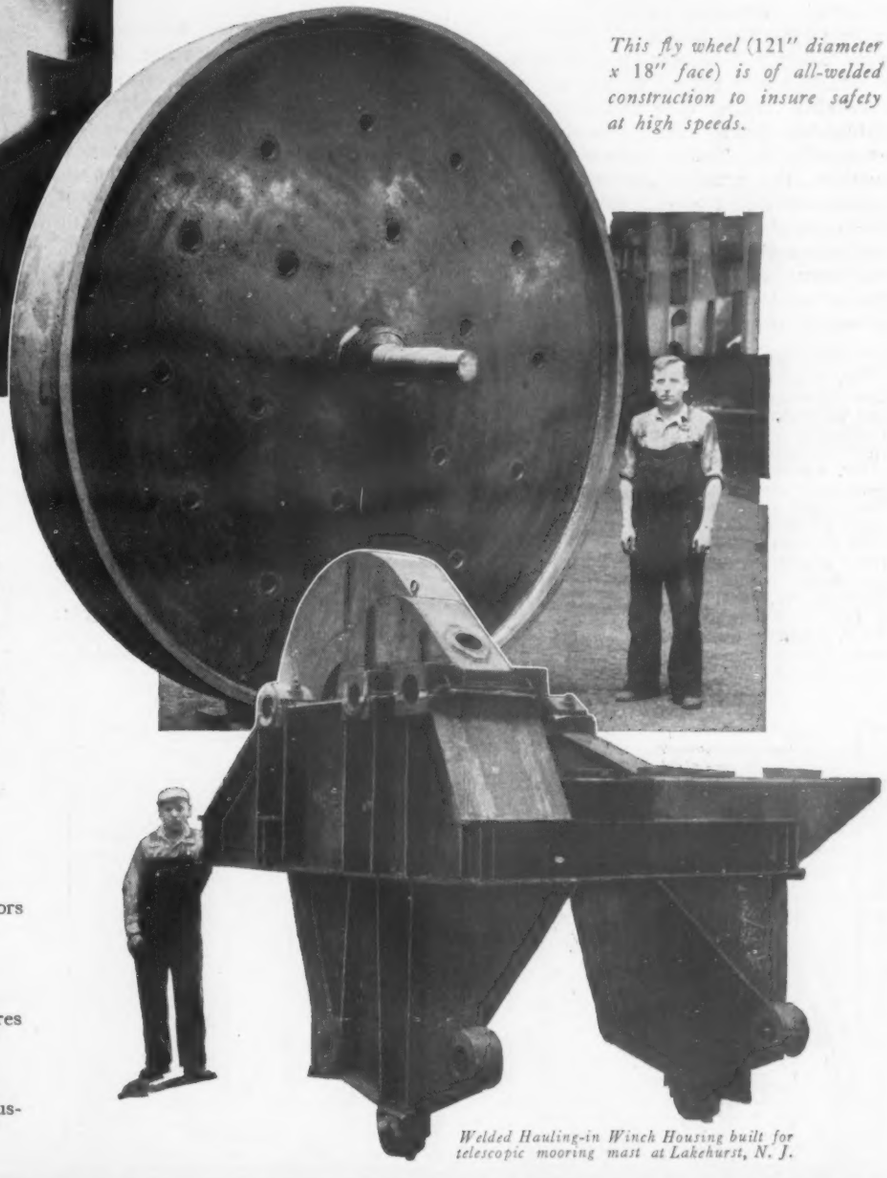
9 *millimeters* 30 *per cent* 0.5-*millimeter* 96 *per cent*

Fig. 8—Structure of *cold-rolled mild steel*

WELDED ROLLED STEEL

The importance of electrical welding in modern machinery construction cannot be over-estimated. It not only saves expensive patterns but permits lighter yet stronger construction and eliminates blow-hole hazards. What are **your** problems? You can depend on Wellman for welding of the highest character!

This fly wheel (121" diameter x 18" face) is of all-welded construction to insure safety at high speeds.



Welded Hauling-in Winch Housing built for telescopic mooring mast at Lakehurst, N. J.

WELLMAN

PRODUCTS INCLUDE PRODUCTION AND HANDLING MACHINERY FOR IRON, STEEL AND COKE INDUSTRIES.

◆

Blast Furnace Skip Hoists
Car Dumpers, all types
Charging Machines and Manipulators
Coke Oven Machinery
Gas Producers, Flues, etc.
Gas Reversing Valves
Mining Machinery
Safety Stops for Traveling Structures
Special Cranes
Steel and Tube Mill Equipment
Williams Buckets and Trailers
Castings and Machine Work to customer's drawings.

THE WELLMAN ENGINEERING CO.

ENGINEERS CONSTRUCTORS MANUFACTURERS

CLEVELAND, OHIO

BIRMINGHAM • NEW YORK • MEXICO CITY

LARGEST SINGLE CONTRIBUTOR TO IMPROVEMENTS IN EQUIPMENT FOR IRON AND STEEL INDUSTRY

brass and austenitic steels[21], [25]. Such materials have a great capacity for deformation under tensile stress, because the phenomena of "necking" in these materials occurs only after large deformations. The flow curves of most metals under compressive stress deviate only slightly from those for tensile stress, so that practical calculations can be based upon a single flow curve for both tensile and compressive stress[26], [27].

The causes of strengthening (by cold working) are diversified. Part of the increase in strength can arise from the gradual out-spreading of the plastic deformations through the crystals which are unfavorably oriented. Another part can be attributed to the rotation, which occurs during deformation, of those crystalline slip planes which are unfavorably located with respect to the deforming force (strengthening by orientation). These factors become smaller, the greater the number of equivalent slip planes which exist in the crystals. In general, however, the strengthening is caused by the increasing resistance to shear along the crystalline slip planes (crystal strengthening), which goes hand in hand with increasing deformation. Opinions vary widely with respect to the causes of this phenomenon. Whereas P. Ludwik[28] assumes a mutual obstruction of the slip planes, other investigators suggest the formation of an amorphous phase along the surfaces of slip[29], or a twisting and roughening of the slip surfaces[30], as causes of this phenomenon. The strength of metals undergoes a more rapid increase at the beginning of deformation than in the subsequent course of the deformation. The crystal strengthening appears to increase approximately in proportion to the displacement, and therewith to the deformation.

Inasmuch as the deformation resistance increases inordinately with increasing deformation during cold working, and the capacity of the material for deformation is continuously diminished; it is usual in large cold deformations, such as those which occur in drawing, deep drawing, and cold rolling, to subdivide the process of deformation and to restore the original condition of the material by means of intermediate annealing operations. Usually, heating for complete recrystallization is employed for this purpose. Without this heat treatment, the material becomes brittle, and finally fails even under small tensile stresses. This perhaps may be caused by the fact that local crevices, produced by deformation, are not closed up again when forming is done at a low temperature. The capacity for deformation of metals is much greater, the greater fineness of grain the structure possesses. Such a structure frequently can be obtained as a result of suitable heat treatment, such as annealing, normalizing, etc.

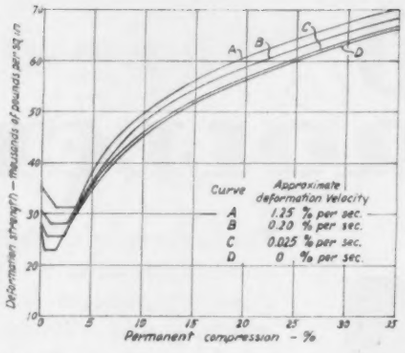


Fig. 11—Flow curves of mild steel, with varying speed of deformation

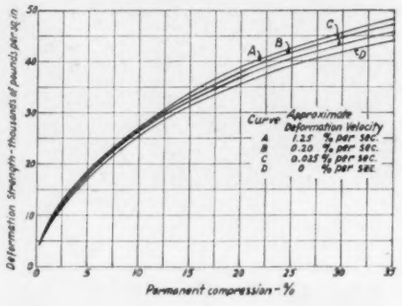


Fig. 12—Flow curves of copper, with varying speed of deformation

It has been shown that the effect of the velocity of deformation upon the shape of the flow curve in cold working is comparatively insignificant. In Figs. 11 and 12 are shown the flow curves obtained from compression tests of mild steel and copper, with deformation velocities from 0 to 1.25 per cent per second. The deviations of the flow curves in this range of velocity remain less than 10 per cent[31]. Dynamic tensile tests on mild steel, which were conducted by F. Korber and H. A. v. Storp[32] with a deformation velocity of about 10,000 per cent per second, gave an increase in the deformation strength of only 30 to 50 per cent above the static value. E. Meyer[33] and H. Seehase[34] came to

[24]F. Korber and W. Rohland: Uber den Einfluss von Legierungszusatzen und Temperaturanderungen auf die Verfestigung von Metallen; Mitt. K. W. Inst. Eisenforsch. 5 (1923) p. 55.

[25]F. Korber and H. Muller: Die Verfestigung metallischer Werkstoffe beim Zug- und Druckversuch; Mitt. K. W. Inst. Eisenforsch. 8 (1926) p. 181.

[26]E. Siebel and A. Pomp: Die Ermittlung der Formanderungsfestigkeit von Metallen durch den Stauchversuch; Mitt. K. W. Inst. Eisenforsch. 9 (1927) p. 157.

[27]P. Ludwik and R. Scheu: Vergleichende Zug-, Druck-, Dreh-, und Walzversuche; St. u. E. 65 (1925) p. 373.

[28]P. Ludwik: Uber die Anderung der Metalle durch Kaltreckung und Legierung; Z. V. d. I. 63 (1919) p. 146.

[29]B. W. Rosenhain: Int. Z. f. Metallographie 5 (1914) p. 65.

[30]G. Masing and M. Polanyi: Kaltreckung und Verfestigung; Erg. Exakt. Naturw. 81 (1923) p. 177; Z. Metallk. 16 (1924) p. 104.

[31]E. Siebel and A. Pomp: Einfluss der Formanderungsgeschwindigkeit auf die Fliesskurve von Metallen; Mitt. K. W. Inst. Eisenforsch. 10 (1929) p. 63.

[32]F. Korber and H. A. v. Storp: Uber den Kraftverlauf bei der Schlagprufung; Mitt. K. W. Inst. Eisenforsch. 7 (1925) p. 81.

[33]E. Meyer: Der Verlauf des Zugversuchs beim raschen Zerreisen; Forsch. -Arb. No. 295 (1927) p. 62.

[34]H. Seehase: Die experimentelle Ermittlung des verlaufs des Strosskraft usw.; Forsch. -Arb. No. 182 (1915).

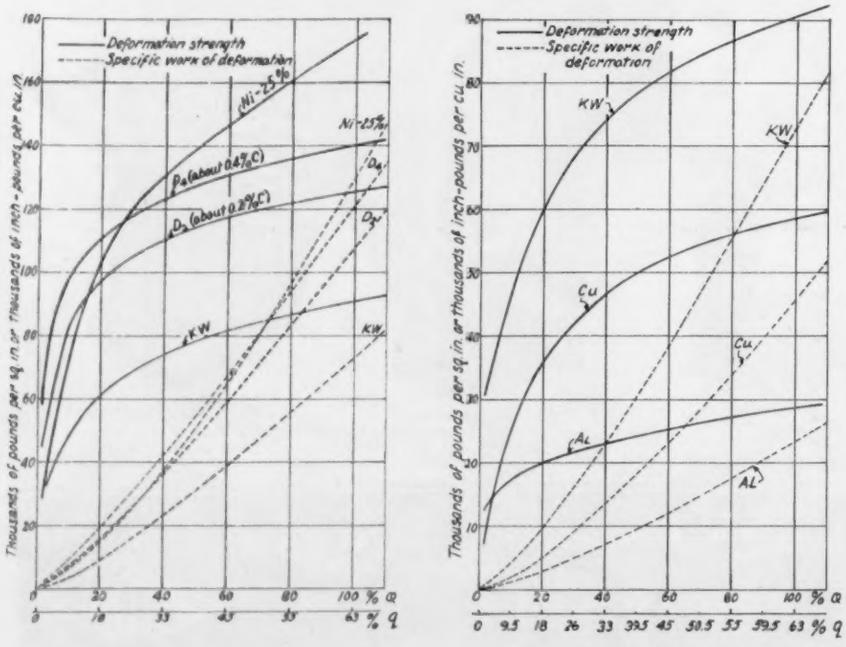


Fig. 9 (left) and 10 (right)—Deformation strength and specific work of deformation in the compression of various steels and nonferrous metals

ADVERTISING PAGES REMOVED

similar conclusions in dynamic tensile and compressive tests. Practical experience also points in the same direction. Thus, only a small increase in the drawing force was observed in drawing tests with mild steel and copper wires, in which the velocity of drawing was increased from 0.039 to 15.6 inches per second[35].

Nevertheless, the relations are fundamentally different when metals such as tin and lead, which recrystallize at room temperature, are deformed[31], [36]. In such cases, as Fig. 13 shows for soft lead, the deformation velocity has a pronounced influence upon the deformation strength. The distinguishing aspects of a hot-working operation appear in this case.

Influenced by Temperature

In hot-working, recrystallization occurs simultaneously with the distortion of the crystals produced by the deformation. If the deformation temperature lies only slightly above the temperature of recrystallization, the rate of recrystallization is then so small that the structure can be restored only slightly or not at all during the deformation, and a strengthening occurs similar to that of cold-working. Because the rate of recrystallization increases rapidly with increasing temperature, evidences of strengthening become much smaller, the more the forming temperature exceeds that of recrystallization. The temperature has a great influence, not only upon the increase of strength, but also upon the initial strength, because the latter decreases rapidly with increasing temperature, as a consequence of increasing atomic activity. The deformation strength during hot-working, therefore, is closely dependent upon the temperature.

In Figs. 14 and 15 the variation of the deformation strength of steel having various carbon contents is shown in relation to the temperature. These data were obtained by H. Hennecke[37] in compression tests under a hydraulic press and under the hammer, with a compression of 30 per cent. In the tests under the press, the deformation velocity amounted to about 6 per cent per second, whereas a velocity of approximately 7000 per cent per second was reached in the dynamic compression. The great influence of the temperature upon the deformation strength is shown distinctly in the illustration. Comparison of the static and dynamic tests, moreover, shows the effect of the velocity of deformation upon the deformation strength. In compression under the hammer, the deformation strength developed was from two to two and one-half times that developed under the press. Accordingly, the effect of velocity has a much greater significance in this case than in cold-working. This probably is the result of the lower rate of recrystallization at the lower temperatures, which, with smaller deformation velocities, is sufficient to offset the strengthening; but higher speeds of deformation the strengthening during forming cannot be prevented. At high temperatures, the rate of recrystallization becomes inordinately great. The influence of the deformation velocity, therefore, can be explained here only from the standpoint of viscosity.

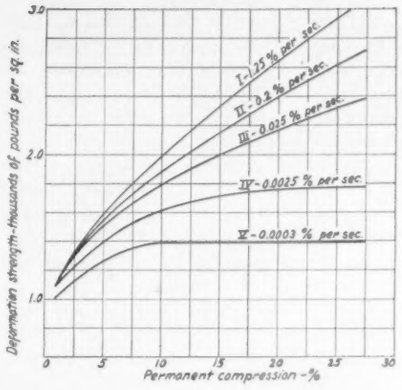

Deformation strength-thousands of pounds per sq. in.
Permanent compression-%
I-1.25 % per sec.
II-0.2 % per sec.
III-0.025 % per sec.
IV-0.0025 % per sec.
V-0.0003 % per sec.

Fig. 13—Flow curves of soft lead, with varying speed of deformation

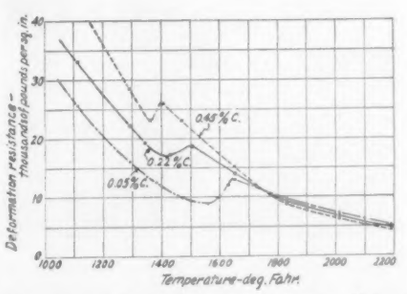
Curves Show Valleys

It seems worthy of notice that the curves of the deformation strength in Figs. 14 and 15 indicate a discontinuity in the region of the α to γ transformation of the steel. According to tests by E. Houdremont and H. Kallen[38], this discontinuity is attributed to the fact that the velocity of recrystallization in the vicinity of the transformation points is smaller in the γ-region than in the α-region. The characterized shape of the curves is of practical significance, inasmuch as the deformation strength in the working of steel ceases to increase during cooling between 1742 degrees Fahr. and 1472 degrees Fahr., but remains practically constant. The increase of the deformation strength with increasing velocity of deformation makes it appear inadvisable to choose too high a speed of deformation in heavy press work and similar operations. With small bars, a high deformation velocity usually is required, by the condition that undue cooling of the material must be avoided during the process of deformation.

Metal Capacity Varies

The capacity of metals for deformation is usually much greater in hot-working than in cold-working. In this case, in contrast to cold-forming, the initial condition of the structure can be restored continuously. By means of a uniform structure of the metal considered, the capacity for deformation at the working temperature is raised, and it is lowered by means of a nonuniform structure. Thus, a coarse-grained structure, particularly the cast structure, stipulates a low deformability. It is therefore necessary to work cast ingots with extreme caution at first, until the cast structure is destroyed. Harder constituents, such as those produced in high-carbon and alloyed tool steels, especially by means of carbide, likewise act unfavorably upon the capacity for deformation. Pure carbon steels therefore are malleable only up to a carbon content of about 1.5 per cent. Pure metals, or alloys having a structure at the temperature of working which is composed of pure composite crystals (eutectic), behave most favorably in deformation. The hot-forming of the common metal alloys, such as steel and brass, usually is carried out in this condition.

In hot-forming, metals frequently



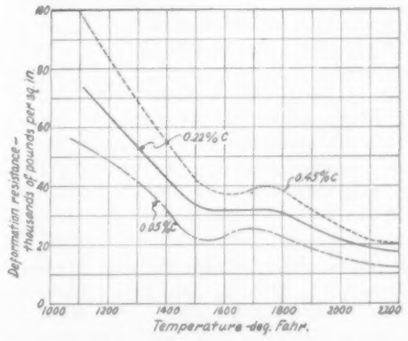


Fig. 14 (left) and 15 (right)—Effects of composition, temperature and compression velocity on the deformation strength of plain-carbon steels

[35] A. Pomp, E. Siebel and E. Houdremont; Uber den Kraft- und Arbeitsbedarf beim Kaltziehen von Drahten; Mitt. K. W. Inst. Eisenforsch. 11 (1929) p. 53.

[36] P. Ludwik: Uber den Einfluss der Deformationsgeschwindigkeit bei bleibender Deformation usw., Phys. Z. 10 (1909) p. 411.

[37] H. Hennecke: Warmstauchversuche mit perlitischen, martensitischen und austenitischen Stahlen; Ber. Werkstoffaussch., V. d. Eisenh. 94 (1926); St. u. E. 48 (1928) p. 315.

[38] E. Houdremont and H. Kallen: Formanderungsfestigkeit und Rekristallisationsgeschwindigkeit von niedriggekohltem Stahl; Ber. Werkstoffaussch. V. d. Eisenh. 72 (1925).

show a great sensitivity toward tensile stress. The causes of this sensitivity are of several sorts. If a cast metal contains cavities, due to blowholes, gas inclusions, and other effects, these holes widen under the influence of tensile stresses and ultimately become torn open. On the other hand, the cohesiveness of the material at the grain boundaries frequently appears to be weakened by heat. This phenomenon is easily understood when the metal is worked during solidification, so that portions, which are still fluid, accordingly exist between the individual grains. It also can be explained in the working of wrought iron, as long as the grains are still enclosed by slag and no complete welding has occured. Inclusions of metalloids, such as sulphur, also have prejudicial effects in this respect. When these inclusions exist at the grain boundaries in the form of easily-melted compounds, such as iron sulphide or nickel sulphide, the cohesion of the material in hot-forming is destroyed by the inclusions, and red-shortness results. These inclusions, therefore, should be removed or converted metallurgically into a harmless form in order to prevent segregation at grain boundaries.

In the hot-forming of metals, which are highly susceptible to red-shortness, it is possible to increase the capacity for deformation, as already explained; by arranging the forming process in such a way that deformation occurs under the highest possible average pressure, and so that tensile stress is avoided. Thus, materials which can be formed only with great difficulty by means of forging or rolling, such as certain brass alloys, can be formed easily in extrusion, in which a high average pressure prevails. Moreover, great deformations in a single operation can be obtained in extrusion. Another example is provided by the manufacture of ball bearing races of chome steel.

With this particular material, the production of the hollow billet is difficult by the Mannesmann process, whereas piercing under a higher average pressure, as in the Ehrhardt process, can be carried out without hesitation. Moreover, weld-steel billets, until completely welded together, can be rolled only in closed passes in which pressure is applied from all sides. In any event, it is advisable to take into consideration the deformability of the material in the choice of the forming process.

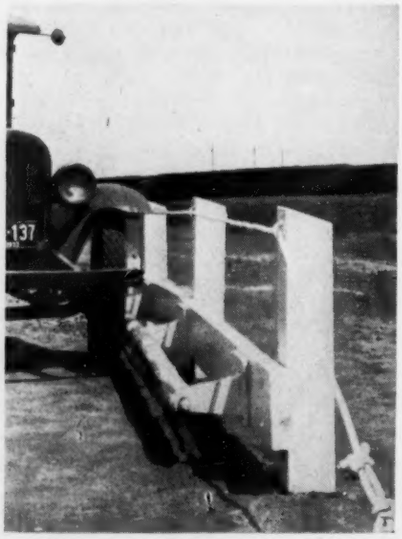
Highway Guard of Steel Pipe Deflects Runaway Cars Back Onto Road

COMPRISING a horizontal pipe of 4-inch outside diameter, mounted on suitable bearings which permit it to rotate freely, a new type of highway guard known as the rotary safety highway guard, has been developed by the Machined Steel Casting Co., Alliance, O.

Instead of attempting merely to withstand collision impact, the new guard is said to avoid accidents by diverting the car which strikes it back on the road. When struck by the wheel of the car, which is rotating in a downward direction, the pipe likewise is set into rotation, making it impossible for the wheel to climb over the guard.

Attached to Fence

The pipe, supported by heavy rolled steel standards rigidly bolted to a concrete base, or mounted on a highway fence as shown in the illustration, is placed sufficiently low to preclude possibility of injury to fenders, bumper, hub caps, running board or body of the car. When a car crashes into this new type of guard the only part that makes contact with the guard is the tire which, naturally, provides a cushioning effect to the shock. Bearings in the guard are loose enough also to provide a cushioning effect, while the steering gear of the car provides a third softening effect to the impact, since it starts to turn the moment the tire strikes the pipe.



When the tire of a car strikes the steel pipe of this highway guard, the car is deflected back onto the road by the rotation of the pipe

A considerable amount of steel is involved in construction of the guard. It is made up of 6-foot lengths of standard welded pipe, weighing 9.2 pounds per foot. Supporting brackets are placed every 6 feet, weigh 17 pounds each and are made from an 8-inch section of 12-inch 50-pound I-beam, two brackets being cut from one section of beam. In addition, plugs in one end of each pipe and collars in the opposite ends are required, as well as four bolts for each bracket. The guard also can be supplied with 8-foot pipe lengths, reducing the cost slightly.

Recently the company has developed an all-steel fence on which the guard may be mounted, instead of the wooden fence illustrated. Each post comprises two 3 x 4 x ½ inch angles, bolted together top and bottom. Pipe supporting brackets are clamped between the angles near the ground level; a small hook is clamped at the top of the posts to carry a steel cable.

Low-Cost Tank Has Steel Frame, Lead Lining

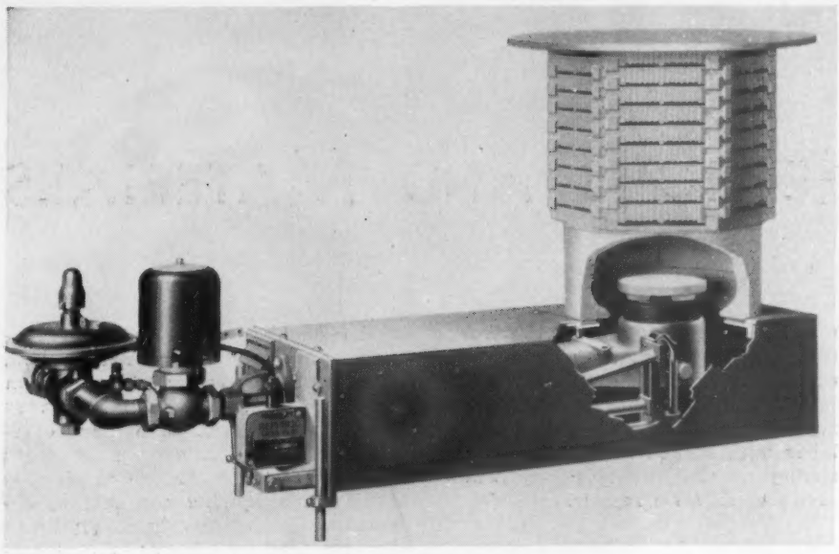
Economy of construction is claimed for a new type of pickling tank built up of standard steel sections and lined with chemical lead. Base may be of I-beams, rails or other type of structural steel now classified as scrap or short ends. Steel angles are placed on this base to support channel cross members at intervals of about 2 or 3 inches. The sheet lead lining rests directly on these channel cross members and is carried up the sidewall and over a top angle. Design has been developed by the Dietzel Lead Burning Co., Keystone building, Pittsburgh, contractor in lead work.

The sidewall frame of the tank is bolted or welded to the bottom and top angles. Outer bracing may be accomplished by extending every other base beam and putting a brace to the top of the sidewall. These braces may be buckstaves, I-beams or any similar available sections.

It is pointed out that the average company will be able to build this tank with its own help and from materials which are to be had largely from supplies on hand. Thus the cost of the tank is reduced consideraby and the cost of the sheet lead lining is no more than if installed in a solid tank.

Jessop Steel Co., Washington, Pa., has been awarded corrosion-resisting steel floor plates for the navy, delivery at Washington, at $19,977.29; bids Oct. 3.

ADVERTISING PAGES REMOVED



—*Photo courtesy Autogas Corp., Chicago*

Estimates place the amount of iron and steel used for the manufacture of domestic gas heaters at 1000 tons annually. The unit shown has its enclosing case and shutters made of flat-rolled steel

LARGE USES OF STEEL IN SMALL WAYS

251st Article ◆ Gas Home Heaters

GROWING popularity of use of oil and gas as sources of home heating has contributed to the declining use of coal, but has provided larger markets for the iron and steel industry. As described in the Feb. 22, 1932, issue of this series, production of oil burners has developed into an annual market for 25,000 to 30,000 tons of steel for burners, tanks and piping. Adoption of gas burners for home heating previously was retarded, and still is in some sections of the country, by the relatively high cost of gas compared with that of coal. Largest markets for domestic burners have been in the West and in other districts where low-cost natural gas has been available, but laying of pipe lines from natural gas fields has served to expand use of this fuel and gas prices have declined to a more competitive basis with coal and oil fuels.

In the Chicago metropolitan district, for example, gas now is available at one-half the 1930 rate and an intensive sales campaign this year has resulted in the installation of more than 12,000 burners since July, with total sales for the year expected to be about 15,000. In recent years annual sales over the country have been about 20,000, and an increase in this figure is anticipated for 1933.

Roughly, 1000 tons of iron and steel, the larger portion of this total being castings, are required yearly for the manufacture of gas heaters. A small tonnage of steel pipe also is needed in installing the equipment. About 400 tons of refractories are consumed annually in the industry.

Air Is Proportioned

A typical unit, shown in the accompanying illustration has a rectangular case assembly 30 inches long, 12 inches wide and 7 inches high. The case, made of 18-gage flat rolled steel, encloses the cast-iron venturi or mixing tube and conducts secondary air to the burner. The amount of air is regulated by a series of sheet-metal shutters assembled in the front frame so that they will open to relieve any abnormal pressure which may exist within the casing. An opening is provided at the top of the case for a cast-iron top plate secured to the rear end frame and which serves to support the refractory radiants and radiant base. A steel bracket fastened to the bottom and inside of the casing serves as a guide for the pilot assembly.

The burner head assembly, shown in the cutaway section of the illustration, consists of three main parts: Venturi head, inner tube and outer ring. The venturi head is cast integrally with the venturi tube and is open at the top to receive an inner tube assembly which threads into the base of the head. An outer ring, made of high-chrome cast iron, rests on the top of the head. The inner tube serves to support a head plate or air deflector made of refractory material. The venturi or mixing tube is a cast-iron tube having an inlet diameter of 2½ inches and a throat diameter of 1-inch, tapering gradually to the enlarged chamber which forms the burner head.

Other important parts of the unit include the inspirator nozzle, pilot assembly, automatic valve and pressure regulator. A pilot flame is provided to ignite the main burner while a safety switch is operated automatically, through the action of two bimetal strips, in the event abnormal temperatures exist in the vicinity of the pilot. The gas supply is shut off by a mercury tube safety switch when the pilot flame becomes extinguished. Radiants are assembled to any desired height, according to requirements of the individual installation. When greater heating capacity is required, larger units having two burners may be provided.

Operation of the system is controlled by a room thermostat. When the temperature drops below the predetermined setting a circuit is completed which causes the automatic valve to open, permitting gas to flow to the burner head where it is ignited by the pilot. When the room temperature reaches the desired limit the thermostat opens the circuit, closing the automatic valve and leaving only the pilot burning.

Supplement Gives New Setup on Structurals

Useful information for engineers and designers is included in a recently issued supplement to the well-known *Pocket Companion*, abridged edition, of Carnegie Steel Co., Pittsburgh, and Illinois Steel Co., Chicago. The 24-page supplement furnishes data on CB sections and supersedes all information relating to these sections given in prior publications. Properties and all essential detail dimensions of a modified CB series are given, changes in the series being incidental to full standardization with other makers of wide-flange beams.

Ninth annual conference on welding sponsored by engineering extension and practical mechanics departments of Purdue university, Lafalette, Ind., will be held Dec. 7-8 at Lafayette. Manufacturers of welding equipment will co-operate.

Making the Most of

METHODS AND MATERIALS

RECENT investigations in a number of industrial plants have shown that the total expense of replacing fuses, including the cost of fuses and the lost time of men and machines, frequently amounts to thousands of dollars a year. In a large steel mill, the average cost of fuse replacement was over $7500 annually. An analysis in the machine shop of another company revealed an actual cost of $3224 annually due to blown fuses. This shop has a connected load of 500 horsepower with 60 motors ranging from ¼ to 50 horsepower driving machine tools. Some are driven by individual motors; others, in groups of two to six, are driven by single large motors. It was estimated that an average of three men and three machines were made idle every time a fuse blew. In many cases, these losses are being eliminated by installation of gas-type circuit breakers which give protection without use of fuses.

$ $ $

Large tonnages of 5 to 6 per cent chromium steels with and without small additions of tungsten or molybdenum are used as tubing in oil-cracking stills, hot oil transfer lines, heat exchangers, bubble tower caps, return bends and headers. Furthermore, castings of these steels have given good service in the replacement of cast iron, which grows to a greater extent under influence of heat.

$ $ $

IN QUENCHING saws, an eastern saw manufacturer is using a motor-driven winch to lower the work into the bath. When in position, electrical contact is made to start a time-cycle contactor, set for the desired time of quenching. At the end of the period, the timing contactor energizes the winch motor, thus raising the work from the bath and throwing the time unit to the open-circuit position in which the equipment is ready for another batch. This method saves labor and, in addition, the accurate timing of the quenching operation produces uniform results.

$ $ $

The material commonly used in rolled steel machine construction is hot-rolled mild steel with a carbon content of from 0.15 to 0.25 per cent. This steel is more than twice as rigid as cast iron, the latter failing at 20,000 pounds per square inch and steel at 40,000 pounds. At 20,000 pounds, cast iron stretches 0.004 of a unit and breaks, whereas steel stretches less than 0.002. Steel is particularly adaptable where the piece to be fabricated is in tension; it is able to resist approximately seven times the tensile stress of cast iron.

$ $ $

To insure accuracy for a long time, inserts or tips of tungsten carbide are being used for the contact surfaces of many types of gages, indicating instruments and micrometers. The

alloy also has been employed successfully on burnishing tools, lathe and grinder centers, master cams, and other parts which must withstand a constant wearing action.

$ $ $

In using the oxygen lance it is desirable to have two workmen, one to operate the lance and the other to control the oxygen pressure at the manifold regulator. In starting, only a few pounds pressure is necessary; this is increased as the lance penetrates the metal, the final pressure depending largely on the thickness of the material to be cut and also to a certain extent on the composition of the metal. Thus the maximum pressure is about 75 pounds for medium carbon or machinery steel containing up to 0.50 per cent carbon, and about 100 pounds for low carbon or mild steel. If the job is very heavy, a third workman may be required to change oxygen cylinders and lance pipe. As the lance pipe itself burns during the cutting operation, several lengths of pipe may be necessary on a heavy job. A sufficient supply of pipe should be made available in advance so that there will be no delay in making the change.

$ $ $

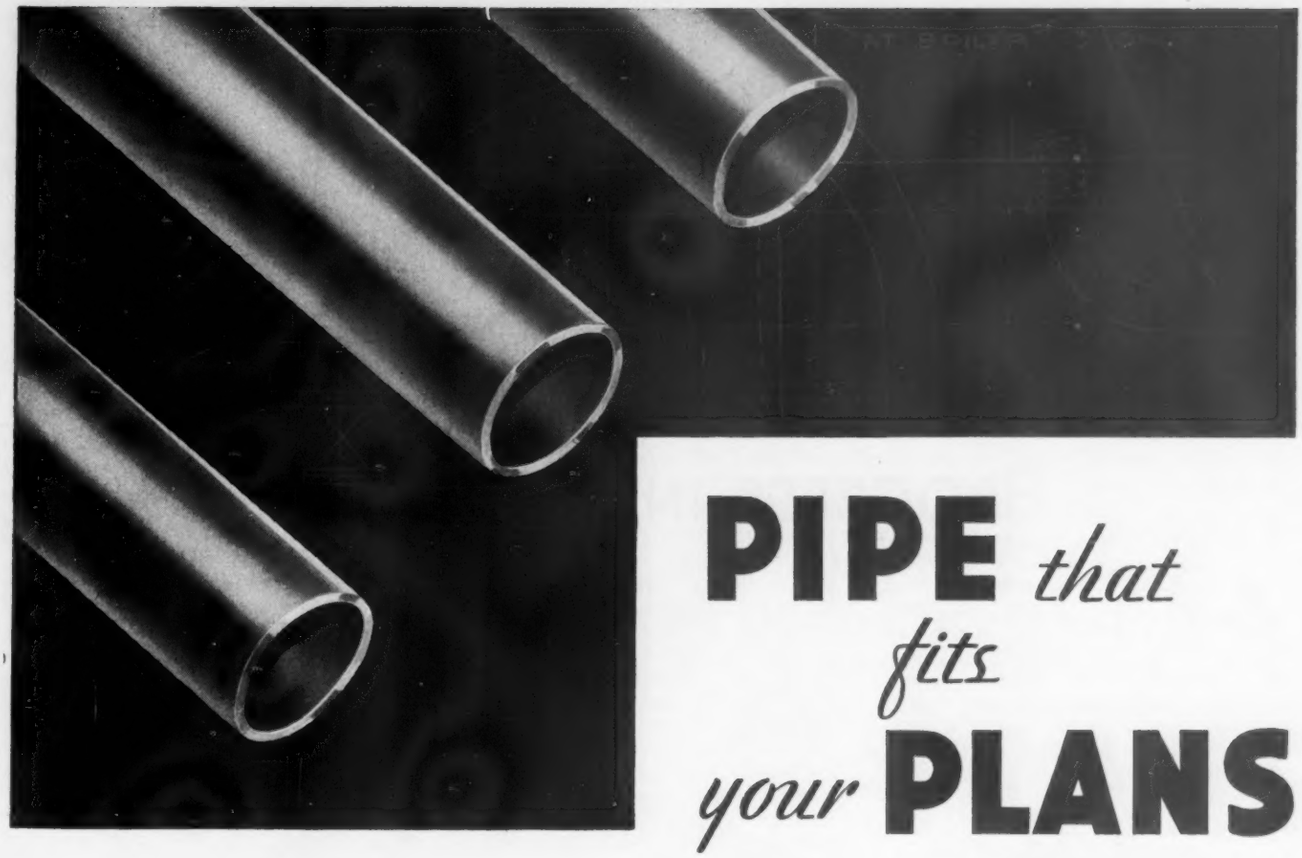
VACUUM tube control is coming into prominence in connection with electric resistance welding. Tubes are used to replace entirely all mechanical contactors formerly used. In spot welding, a mechanical contactor is capable of operating 100 times per minute, but at this rate its life is short. A vacuum tube contactor, possessing no mechanical inertia, permits welding up to 2000 spots per minute, lasts indefinitely and requires practically no maintenance. With this type of control, spot welding becomes in effect line welding, since the spots can overlap to make a continuous welded line.

$ $ $

A Pacific Coast contractor sought to repair a large cast aluminum crankcase from a gasoline engine on which part of the flywheel case and one hanger had broken. Hesitant to undertake the job, the contractor called in an oxyacetylene welding expert for assistance and instruction. The job was completed successfully at an estimated cost of $25. A new crankcase would have cost $350.

$ $ $

Frequent redressing of centerless grinder work blades is necessary because these blades are subjected to such severe wear in many operations. Seeking to reduce maintenance costs in this direction, a gear manufacturing plant equipped these work blades with tungsten carbide inserts. As a result, the blades now produce 10,000 pieces per grind, as compared with 1600 pieces formerly. In one instance, 574,000 pieces were obtained per grind of the tungsten carbide blades, whereas other blades had given less than 2000.



PIPE *that fits your* PLANS

Whatever the anticipated pressures and temperatures that it may be called upon to withstand, NATIONAL Seamless Pipe can be depended upon to fit your plans. Uniform strength and adaptability to fabrication are outstanding advantages of this modern product of the largest manufacturer of tubular goods in the world. Being seamless—no welds—there is no line of possible weakness in it, lengthwise nor in any direction, for each length has been pierced from a billet of solid steel.

NATIONAL Seamless is workable and accommodating where bends have to be made and can be readily used with any kind of joint; flanged without injury, welded with ease. Power plant designers and engineers, in using NATIONAL Seamless Pipe, find altogether new measures of adaptability, satisfaction, and safety. Whatever your plans, this pipe will fit them. When specifying seamless, insist upon NATIONAL—

America's Preferred Seamless Pipe

NATIONAL TUBE COMPANY · Pittsburgh, Pa.

Subsidiary of United States Steel Corporation

WALLS WITHOUT WELDS
NATIONAL SEAMLESS PIPE
STRONG · SAFE · UNIFORM

CHECK THESE ADVANTAGES

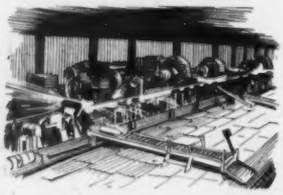
- ✓ *Seamless—no welds.*
- ✓ *High tensile strength.*
- ✓ *Exceptional uniformity.*
- ✓ *Unusual ductility.*
- ✓ *Resistant to corrosive influences.*
- ✓ *Made from superior quality Open Hearth steel.*
- ✓ *Complete range of sizes, wall-thicknesses and lengths.*
- ✓ *Readily adaptable to any type of joint.*
- ✓ *Proved performance under exacting service.*
- ✓ *A product of the largest manufacturer of Seamless Pipe.*

NATIONAL SEAMLESS

PIERCED FROM SOLID BILLETS - NO WELDS

PROGRESS IN STEELMAKING

ALUMINUM blast furnace tuyeres now are standard equipment on a stack in Japan, as a result of recent tests. Copper and aluminum tuyeres installed in the tuyere breast alternately were operated under normal conditions for a period of 40 days. Nine of the aluminum tuyeres failed and 29 of the copper tuyeres.



ARBOR bearings of finishing mill hot saws, which at the start of the cut are loaded lightly (30 to 35 per cent of rated capacities at speeds for saw service) will wear slower and function better than when under higher loads, according to a recent analysis.

♦ ♦ ♦

Planishing of full-finished sheets is facilitated by a newly perfected cold mill. Short rolls, which are adjustable vertically, are located at the center of the two work rolls. All that is required is to adjust the short contour rolls in proportion to the width of the sheet being rolled and the amount of work to be performed. Crowning the rolls or using a gas flame to alter their contour is not necessary. Difficulty with heated roll necks is obviated by the use of antifriction oil bearings.

♦ ♦ ♦

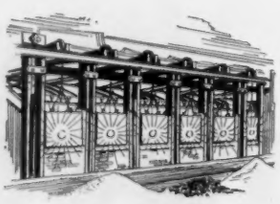
Ferrous metals in the rolled form may be made rustproof by a new process involving the electrodeposition of an alloy composed of a number of nonferrous metals, including cadmium. The treatment is made by submerging the parts in a bath at room temperature for a period of 7 to 10 minutes. Any standard type electroplating equipment may be used, current required being 4 amperes per square foot at 6 volts. Labor and material costs range from ⅛ to ½-cent per pound of stock treated. The deposit is claimed to penetrate any surface voids on the material, the thickness of the coating being 0.0005-inch or less. The natural appearance of the finish is similar to silver. Corrosion resistance up to 600 degrees Fahr. is reported. The coating will not scale or peel, and is not affected by bending or twisting.

♦ ♦ ♦

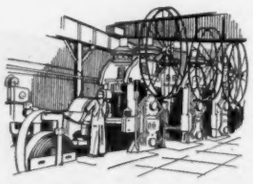
Laminated packing made of rings of stainless steel with fiber asbestos between now is being marketed for seatless blow-off valves for blast furnace and steel mill boilers. The new commodity eliminates leakage even when steam pressures as high as 2000 pounds per square inch are maintained.

♦ ♦ ♦

Embrittling action on steel wire as a result of the pickling process is less when an inhibitor is added to the pickling solution. Recent tests conducted abroad disclose that a mixture of 2 per cent flour paste and 1 per cent stannous chloride solution added to a pickle of 5 per cent acidity is highly effective in reducing the rate of embrittlement.



DETECTING the percentage of carbon in an open-hearth bath as it comes down, recently was accomplished by spark testing. The sample taken in a test spoon is molded into a ¾-inch round, 5 inches long. The piece then is subjected to a medium grain wheel of about 46-0 alundum which operates between 3000 to 4000 feet a minute. The sample is held against the side of the wheel. Ladle analyses of 200 heats checked the results of spark testing with a variation under 0.02 per cent.



INSPECTING the thickness of strip steel in the process of reduction now is accomplished automatically by an electrically-operated gage. The unit is built with hardened steel rolls between which the strip passes on its way to the coiling machine. Any variation in the thickness of the strip, which forces the rolls together or apart, is magnified and indicated on a microammeter.

♦ ♦ ♦

Many high-carbon wiremakers in the East until recently were firing their wire bakers through trench-type combustion chambers. Warped covers, however, permitted leakage and caused the spoilage of many buggies of rods. A solution recently was found by substituting the first 15 feet of the combustion trench with a refractory chamber. The latter consists of a rectangular duct 12 x 12 inches inside cross section and about 15 feet long, formed from tongue and groove silicon carbide tile. The temperature of the gases in the chamber is reduced to such an extent that the remaining part of the heating system is composed of galvanized pipe.

GALVANIZED GOLD

. . . TO YOU

WHEN YOU BUY galvanized sheet metal for any purpose, you pay for it in *gold* or its equivalent. Perhaps you have never looked at it in quite this way; but it explains better than anything else why Armco Galvanized Sheets are known for their "good-as-gold" qualities.

The base metal, whether rust-resisting INGOT IRON or good Armco Steel, is as clean and uniform as the latest refining and continuous rolling methods can make it. That means ease of fabrication—and endurance. The zinc coating is heavy, even and adherent. Sheets form easily and surely and are well protected for lasting service.

You can choose the most appropriate and thrifty grade of galvanized sheet for your express purpose—Armco INGOT IRON, steel or copper-bearing steel, in either the bright-spangled or "Paintgrip" finishes. "Paintgrip" is a boon to products or construction that must be painted soon after forming.

In addition there are several different styles of roofing made from Armco Galvanized Sheets. About these or any of the flat grades we shall be glad to give you the buying facts. Just send your inquiry to our nearest office.

THE AMERICAN ROLLING MILL COMPANY

Executive Offices: Middletown, Ohio

TUNE IN ARMCO PROGRAM
N. B. C. BLUE NETWORK
FRIDAY NIGHT 10:00 E. T.; 9:00 C. T.

ARMCO

ARMCO INGOT IRON galvanized flat and corrugated sheets have full-weight coating applied to uniform, refined iron base.

ARMCO COPPER-BEARING STEEL galvanized sheets are supplied in all standard sizes and gages. Even, heavy coating on durable base.

ARMCO STEEL GALVANIZED sheets offer exceptionally good quality at moderate cost. Full coating on clean steel.

ARMCO PAINTGRIP galvanized sheets supplied in both INGOT IRON and steel grades. Paint and lacquers adhere tightly without pre-treatment. Full-weight coating assured on all grades.

Get the *Right Grades* For Exacting Needs

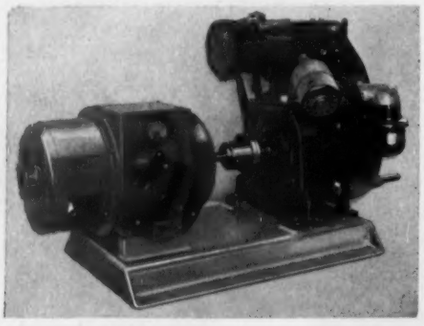
NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Portable Lighting Plants Built in Various Sizes

Harnischfeger Corp., 4400 West National avenue, Milwaukee, recently developed a line of portable lighting plants, shown in the accompanying illustration. The units consist of a one or two-cylinder gasoline engine directly coupled to a compound wound, continuous generator. Pushbutton or manual starting is available. Capacities range from 400 watts to 3 kilowatts generating 35 or 120 volts direct current.

Larger capacities are provided by four and six-cylinder gasoline generator sets with a current range of 1½ to 60 kilowatts. In addition to these



Harnischfeger lighting plants are gasoline or diesel driven

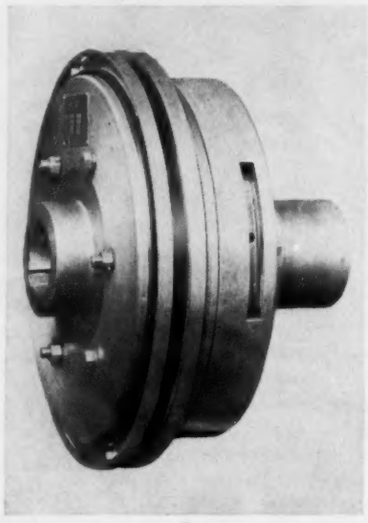
gasoline-driven sets, diesel power also is available. Diesel sets are built in capacities of 35 to 50 kilowatts, alternating or direct current. Because of the large capacities of these units, electric lights and appliances may be operated simultaneously.

◆

Magnetic Clutch Embodies Unique Construction

Magnetic Mfg. Co., Milwaukee, has designed a line of safety-type magnetic clutches, built along the principle heretofore used extensively only in magnetic brakes. This type clutch, shown herewith, operates in the reverse manner to the standard magnetic clutch in that it is mechanically closed by means of powerful springs and opened magnetically in opposition to same, whereas on the standard clutch the closing is accomplished magnetically and the opening by mechanical means.

The clutch is particularly suitable where continuous engagement is required and the clutch disengaged



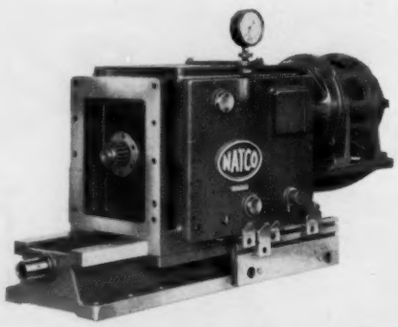
New safety-type magnetic clutch marketed by Magnetic Mfg. Co.

only at frequent intervals. A comparatively small magnet can be employed with intermittent duty coil developing high pressure for disengagement, while the spring or mechanical closing feature permits continuous operation without electrical connection or cost. The clutch may be built in single as well as multiple disk construction.

◆

Hydraulic Units Are Compact And Interchangeable

National Automatic Tool Co., Richmond, Ind., is marketing a line of self-contained hydraulic units, shown herewith. They have been designed to provide standard compact units which can be arranged in groups to drill all holes in various sides of a piece at one handling, and are flexible and interchangeable. Should the part for which the units are arranged, be



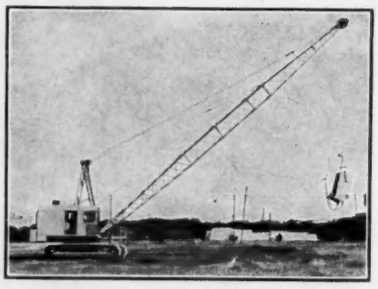
Self-contained hydraulic unit built by National Automatic Tool Co.

altered or discontinued, it only is necessary to rearrange the units, equip them with drill heads and the machine may be employed for an entirely different piece of work. One motor drives the drill head and also the pressure pump. A variety of sizes are available.

◆

Large Capacity, Simplicity Combined in Dragline

Northwest Engineering Co., 28 East Jackson boulevard, Chicago, recently developed a new dragline which combines large capacity with simplicity, mobility and operating economy. A cushion clutch is employed, which acts as a guard against overloads that occur when the bucket strikes rocks or other firmly anchored obstacles. Steering of the machine, shown herewith, is accomplished with positive traction on both crawlers while turning as well as when moving directly ahead.



Short tail swing and compactness are features of Northwest dragline

Use of holddown rollers provides a design that resists the tendency of the rotating base to "pry" away from the crawler base.

◆

Photronic Control Kit Has Many Industrial Uses

Weston Electrical Instrument Corp., 614 Frelinghuysen avenue, Newark, N. J., has announced a new, inexpensive photronic control kit which is being marketed especially for those engineers and manufacturers who prefer to do their own experimenting with photoelectric control for mechanical equipment, operations and for processes of various kinds. The kit contains all the equipment necessary to start immediate experiments, together with diagrams of connections. The equipment can be used as a smoke detector, burglar alarm, turbidity de-

NEW EQUIPMENT

tector, door opener, counter for all classes of service, safety device on machines, etc. The cell included in the kit is the Weston photronic cell which transforms light energy directly into electrical energy and operates relays without the use of any auxiliary apparatus or batteries.

◆

Designs New High-Pressure Union for Pipe Lines

United Superior Union Co., subsidiary of the Mergenthaler Linotype Co., Brooklyn, N. Y., is distributing an improved high-pressure union for oil, gas, steam, water and air lines. The device has two serrated ends, one hard and the other soft, which form four distinct seats and safeguard against leakage. Unions are made both in black and cadmium plated, and can be used a number of times, as a single "making-up" cannot possibly spoil the four separate seats.

◆

New Agitator Is Built In Two Types

Patterson Foundry & Machine Co., East Liverpool, O., recently added a new agitator to its line. The unit, shown herewith, is built in both vertical and horizontal types, and when using 1800 revolutions per minute motors, will produce shaft speeds down to less than one revolution if desired, without the use of gears. Light and compact, the agitator is particularly adaptable for installation over tanks or vats. One or two-way agitation can be accomplished without noise, vibration or slop, and heavy continuous loads or momentary overload as high as 400 per cent can be carried, it is claimed.

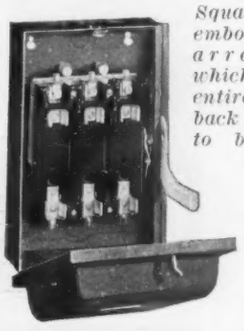
Unipower agitator built by Patterson Foundry & Machine Co.

◆

Compactness Is Feature of New Switch Boxes

Square D Co., Switch & Panel division, Detroit, is introducing a new line of compact switches. While the cabinets of these new units, shown herewith, have much smaller external dimensions than previous designs, capacity has not been reduced as the base arrangement permits the entire area of the back of the box to be used for wiring. This is accomplished by the elevation of the base from the back of the box by means of four mounting posts, allowing, ample room for wires.

Compactness of the line may be illustrated by the dimensions of the new 3-pole, 60-ampere, 575-volt model which is only 13½ inches high, 8 inches wide and 5½ inches deep compared to the previous model which was 17 inches high, 14¾ inches wide and 6½ inches deep. No bolted sections are required in the construction of the operating handle as it is mounted to the side of the box independent of the balance of the operating mechanism. The switches have a complete interlock, quick make and break and a double break similar to that used on panels manufactured by the company.

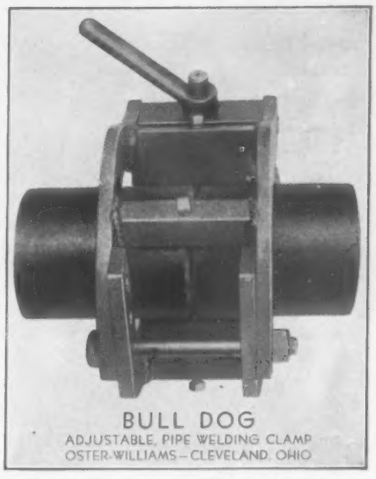


Square D switch embodies a base arrangement which permits the entire area of the back of the box to be used for wiring

◆

Welding Clamp Centers Pipe Lengths Automatically

Oster-Williams, Cleveland, recently introduced a new pipe welding clamp made in two ranges, one from 4 to 6 inches, and the other from 8 to 12 inches. The clamp, shown herewith, is adjustable for all sizes within its range. Other sizes will be available in the near future. One lever controls the action of the clamp, making it easy to fit on and remove from the pipe. The two lengths of pipe to be welded are centered automatically, and adjustable screw spacers keep them the proper distance apart. Open construction of the clamp leaves an unusually large amount of space for tacking.

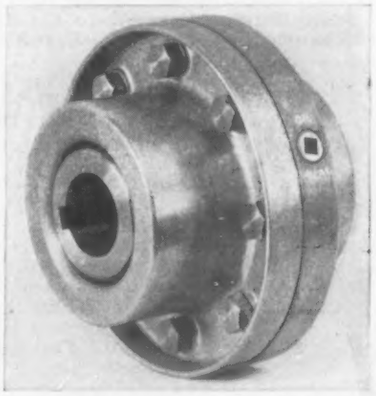


One lever controls action of Oster pipe welding clamp

◆

Light-Duty Coupling Employs Die Cast Sleeves

Bartlett Hayward Co. Inc., Baltimore, is marketing a new light-duty Fast's coupling, shown herewith. Forged steel hubs and die cast sleeves or casings are employed for sizes from 1 to 2⅛ inches, horsepowers from 2 to 15 per 100 revolutions per minute and maximum speed of 3600 revolutions. These units are designed for applications covering a wide variety of types and conditions of operation.



Light-duty Fast's coupling developed by Bartlett Hayward Co.

SAVE WITH STEEL

WEIRTON

ROOFING SHEETS AND TERNE PLATES

WEIRTON PRODUCTS INCLUDE:

Pig Iron
Open Hearth Steel
Billets — Slabs — Sheet Bars — Skelp
Angles, Beams and Channels
Round, Square and Flat Bars
Rails—Steel Plates—Tie Plates
Track Spikes—Splice Bars
Reinforcing Bars—Coke Tin Plate
Kanners Special Cokes—Best Cokes—Charcoals
Lacquered and Coated Tinplate
Tin Mill Black Plate (All Finishes)
Lacquered and Coated Black Plate
Open Hearth Copper Bearing Terne Plate
8 lb. to 40 lb. Coated
Hot and Cold Rolled Strip Steel and Strip Steel Sheets
High Finish Sheets
Long Terne Sheets
(Common and Special Finishes)
Galvanized, Black and Blue Annealed Sheets
Corrugated Sheets, V Crimp Sheets, Roll Roofing
Single Pickled, Full Finished and Auto Body Sheets
Many gauges and grades up to 75 inches in width now available
Coke—Tar—Benzol—Toluol—Ammonium Sulphate

Products of super quality, resulting from complete ownership control of raw materials from ore mines to finished product—latest processes—most modern equipment—large staff of metallurgists, engineers, designers and highly trained labor bent on building confidence with products.

WEIRTON STEEL CO.

Division of National Steel Corporation

WEIRTON W. VA.

SALES OFFICES IN ALL PRINCIPAL CITIES

Market Hopes Lie in Railroads, Public Works

Govt. Financing Maturing Rails, Fastenings and Cars—Small Jobs Bulk Large in Shape Awards—October Pig iron Output Off—Steel Rate Now 25%

WITH the general demand for steel still shrinking, hope for a reversal of the downward trend in steelworks operations rests upon the promptness with which the program of railroad buying and the requirements for public works projects can be converted into rolling mill schedules.

Agreement on a price of $36.375 for standard rails and the allottment by PWA of $135,000,000 to the railroads for the purchase of rails, trackwork, rolling stock, power and equipment would seem to clear the way for the placing of orders at an early date. However, the expenditures may be spread over a period of many months. For instance, the $51,000,000 nominally set aside for the purchase of 1,000,000 tons of rails and 400,000 tons of fastenings, is likely to extend over the entire year of 1934.

Pennsylvania Program Heavy, Probably Releasing 40,000 Tons of Shapes; Most Lettings Small

At the moment, the allocation of $84,000,000 to the Pennsylvania's electrification program seems to hold more promise of early, diversified business than the track material deal. The announcement from Washington, stating that the PWA allottment provides for roadbed improvement, and the building of 132 electric locomotives and 7000 cars, is interpreted to mean that early releases can be approved of certain orders placed more than a year ago. About 40,000 tons of shapes on old contracts are expected to be released as a result of the plan to resume the Pennsylvania's electrification project. Other Washington reports of contemplated purchases of 100,000 cars are discounted in the steel industry, where the opinion is expressed that 50,000 cars may be the maximum resulting from the government's present efforts. On quotations for the 12 locomotives for the Northern Pacific, some builders are reserving the right to revise quotations should the equipment be purchased through government aid.

Construction projects sponsored by PWA continue to furnish the principal impetus to the plate, shape, concrete bar and cast iron pipe markets. Current awards are comprised of an unusually large number of small contracts. Structural shape awards for the week total 14,809 tons as compared with 22,075 tons in the previous week. Several projects requiring large tonnage have been held up pending the settlement of disagreements. Bids for 14,000 tons of shapes for New York Central grade separation work at Syracuse, N. Y., will close Dec. 5. Tenders for 8000 tons for the West Side elevated highway, New York City, were due Nov. 3. The eastern plate market has in prospect a fair tonnage for navy work. Bids will be due in November for 12,200 tons of plates for cruisers. Cincinnati is asking for bids Nov. 8 on 32,450 feet of cast iron pipe and 82 tons of fittings.

Nine Fewer Stacks Active Oct. 31; Scrap Continues in Slack Demand, with Index Off Again

Output of coke pig iron dropped sharply in October to 1,354,696 tons, a decline of 10.2 per cent from the 1,507,931 tons produced in September. The number of active stacks on Oct. 31 was 80, as against 89 on Sept. 30. In the two months of recession from the August peak, daily average production has suffered a decline of 26.2 per cent and the number of furnaces in blast has dropped from 98 to 80.

The pig iron market remains quiet, with shipments declining slightly. Current speculation points to a price advance for first quarter business, but the difficulty of introducing higher prices unless consumption improves considerably is appreciated. The scrap market is listless, with prices sagging slightly.

Steelworks operations for the week ending Nov. 4 averaged 25 per cent, a drop of 5 points from the previous week. The rate in the Pittsburgh district was 25 per cent, a drop from 29; in Chicago, 31 per cent, a decline from 36; in Eastern Pennsylvania, 19 per cent, as compared with 20½; and in Youngstown, 32 per cent, from 38. Cleveland, New England and Detroit operations remained unchanged; in Wheeling the rate rose from 36 to 38 per cent; in Buffalo and Birmingham losses were registered.

STEEL's iron and steel composite stands unchanged at $31.59; its finished steel composite remains $49.20; and its scrap index continues its decline, dropping 13 cents to $10.04.

COMPOSITE MARKET AVERAGES

	Nov. 4	Oct. 28	One Month Ago Oct., 1933	Three Months Ago Aug., 1933	One Year Ago Nov., 1932	Ten Years Ago Nov., 1923
Iron and Steel Composite	$31.59	$31.59	$31.59	$30.04	$29.12	$42.81
Finished Steel Composite	49.20	49.20	49.20	47.50	47.20	67.48
Steelworks Scrap Composite	10.04	10.17	10.37	11.57	6.87	14.05

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Nov. 4, 1933	Oct. 1933	Aug. 1933	Nov. 1932
Finished Material				
Steel bars, Pittsburgh	1.75	1.75	1.60	1.60
Steel bars, Chicago	1.80	1.80	1.70	1.70
Steel bars, Philadelphia	2.04	2.04	1.91	1.91
Iron bars, Chicago	1.60	1.60	1.65	1.65
Shapes, Pittsburgh	1.70	1.70	1.60	1.60
Shapes, Philadelphia	1.90	1.90½	1.81½	1.75
Shapes, Chicago	1.75	1.75	1.70	1.70
Tank plates, Pittsburgh	1.70	1.70	1.60	1.60
Tank plates, Philadelphia	1.88	1.88½	1.79½	1.69½
Tank plates, Chicago	1.75	1.75	1.70	1.70
Sheets, No. 10, blue anneal., Pitts.	1.75	1.75	1.65	1.70
Sheets, No. 24, hot ann., Pitts.	2.25	2.25	2.25	2.10
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.85	2.85
Sheets, No. 10, blue anneal., Gary	1.85	1.85	1.75	1.80
Sheets, No. 24, hot ann., Gary	2.35	2.35	2.40	2.25
Sheets, No. 24, galvan., Gary	2.95	2.95	3.00	2.90
Plain wire, Pittsburgh	2.10	2.10	2.10	2.20
Wire nails, Pittsburgh	2.10	2.10	2.10	1.95
Tin plate, per base box, Pitts.	4.65	4.65	4.25	4.50
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	26.00
Wire rods, Pittsburgh	35.00	35.00	35.00	37.00

	Nov. 4, 1933	Oct. 1933	Aug. 1933	Nov. 1932
Pig Iron				
Bessemer, del. Pittsburgh	19.26	19.26	18.26	15.76
Basic, valley	17.00	17.00	16.00	14.00
Basic, eastern, del. eastern Po.	17.76	17.76	17.20	13.50
No. 2 foundry, del. Pittsburgh	18.76	18.76	17.76	15.76
No. 2 foundry, Chicago	17.50	17.50	17.00	15.50
Southern No. 2, Birmingham	13.50	13.50	13.00	11.00
No. 2X, Eastern, del. Phila.	18.63	18.63	17.88	13.95
Malleable, valley	17.50	17.50	16.50	14.50
Malleable, Chicago	17.50	17.50	17.00	15.50
Lake Superior charcoal, del. Chi.	23.54	23.54	23.04	23.04
Gray forge, del. Pittsburgh	18.38	18.38	17.13	15.63
Ferromanganese, del. Pittsburgh	87.24	87.24	87.24	73.24
Scrap				
Heavy melting steel, Pittsburgh	$12.25	12.45	13.75	9.15
Heavy melting steel, eastern Pa.	10.00	10.19	12.00	7.25
Heavy melting steel, Chicago	8.75	9.35	10.40	5.60
No. 1 wrought, eastern Pa.	10.50	10.75	13.00	7.25
No. 1 wrought, Chicago	8.10	9.10	10.35	5.60
Rails for rolling, Chicago	10.25	11.10	11.25	8.25
Coke				
Connellsville, furnace, ovens	3.75	3.25	2.75	1.80
Connellsville, foundry, ovens	4.25	3.85	3.10	2.65

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10 (24 to 48 inches wide)

Pittsburgh, base	1.75c
Gary, base	1.85c
Chicago, del.	1.88½c
New York, del.	2.08c
Phila., del.	2.04c
Birm., base	1.90c
St. Louis, del.	2.07c

HOT ROLLED ANN. No. 10

Pittsburgh, base	1.90c
Gary, base	2.00c
Chicago, del.	2.03½c
Phila., del.	2.19c
New York, del.	2.23c
St. Louis, del.	1.97c
Birm., base	2.05c
F.o.b. cars, dock Pacific ports	2.42½c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.25c
Gary, base	2.35c
Chicago, del.	2.38½c
New York, del.	2.58c
Phila., del.	2.54c
Birm., base	2.40c
St. Louis, del.	2.57c
F.o.b. cars, dock, Pacific ports	2.95c

GALVANIZED No. 24

Pittsburgh, base	2.85c
Gary, base	2.95c
Chicago, del.	2.98½c
Phila., del.	3.14c
New York, del.	3.18c
Birm., base	3.00c
St. Louis, del.	3.17c
San Fran., f.o.b. cars, dock	3.55c

TIN MILL BLACK No. 28

Pittsburgh, base	2.50c
Gary, base	2.60c
St. Louis, del.	2.82c

COLD ROLLED No. 10

Pittsburgh, base	2.30c
Gary, base	2.40c
Philadelphia, del.	2.59c
New York, del.	2.63c

COLD ROLLED No. 20

Pittsburgh, base	2.75c
Gary, base	2.85c
Philadelphia, del.	3.04c
New York, del.	3.08c

ENAMELING SHEETS

Pitts., No. 10	2.45c
Pitts., No. 20	2.90c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh Gary base, 10 cents higher.

Tin plate, coke base, contract	$4.65
Do., stock	4.05
Long ternes, No. 24 unassorted	2.90c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot Strip	17c	18.5c	21c	26c
Cold Strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.70c
New York, del.	1.98c
Phila., del.	1.88½c
Boston, del.	2.10c
Buffalo, del.	1.93½c
Chicago, base	1.75c
Cleveland, del.	1.88½c
Birm., base	1.85c
Coatesville, base	1.80c
Sparrows Pt., base	1.80c
Pac. Coast, f.o.b.	
St. Louis, del.	1.97c
cars, dock	2.25c

Structural Shapes

Pittsburgh, base	1.79c
Philadelphia, del.	1.90½c
New York, del.	1.95½c
Boston, del.	2.08½c
Bethlehem, base	1.80c
Chicago, base	1.75c
Cleveland, del.	1.88½c
Buffalo, base	1.80c
Birm., base	1.85c
Pac. Coast, f.o.b. cars, dock	2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.75c
Chicago, base	1.80c
Birm., base	1.90c
Buffalo, base	1.85c
Pac. Coast ports, cars, dock, c.l.f.	2.30c
Cleveland, base	1.80c
Philadelphia, del.	2.04c
Boston, del.	2.19c
New York, del.	2.08c
Pitts., forg. qual.	1.75c-2.25c

RAIL STEEL
To Manufacturing Trade

Pittsburgh	1.65c
Chicago	1.70c
Cleveland	1.70c
Gary, Ind.	1.70c
Buffalo	1.75c

IRON

Chicago, base	1.60c
Philadelphia, base	1.74c
Pitts., refined	2.75c-7.50c

REINFORCING
New billet

Pittsburgh, cut lengths	1.80c
Chicago, Buffalo, Cleveland, Birm., Young.	1.85c
Gulf ports	2.20c
Pacific coast ports	2.35c
Phila., del.	2.19c

Rail steel

Pittsburgh, base	1.75c
Chicago, Buffalo, Cleveland, Gary, Young	1.80c
Gulf ports	2.15c
Pacific coast ports	2.30c

Wire Products □ □

(Prices on carloads. Mixed carloads up 10c; joint carloads up 20c; less carloads up 30c. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland
(Per 100-lb. keg)

Standard wire nails	$2.10
Cement coated nails	2.10
Galvanized nails	3.60

(Per pound)

Polished staples	2.80c
Galvanized fence staples	3.05c
Barbed wire, gal.	2.60c
Annealed fence wire	2.25c
Galvanized fence wire	2.60c
Woven wire fencing (base column, c.l.)	$55.00
Plain wire, 6-9 gage to mfg. trade	2.10c

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.10c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Bars □

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.95c
20,000 to 59,999 lbs.	1.90c
60,000 to 99,999 lbs.	1.85c
100,000 lbs. and over	1.82½c

Chicago, Cleveland, Buffalo up 5c; Detroit up 20c; eastern Michigan up 25c.

Shafting □ □ □

Turned and ground, Pitts. base	
1⅛-inch	3.25c
1 7/16 to 1½-inch	2.75c
1 9/16 to 1⅞-inch	2.60c
1 11/16 to 2 7/8-inch	2.45c
2 13/16 to 6-inch	2.30c

Alloy Steel □ □

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O., 2.45c. F.o.b. Bethlehem, Pa., 2.55c.

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	base
6100 bars	1.20
6100 spring	0.70
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 carbon base plus extras	

Strip and Hoops □

Hot strip to 23⅝-in. Pitts.	1.75c
Do., Chicago	1.85c
Do., del. Phila.	2.04c
Do., del. N. Y.	2.08c
Cooperage hoop, Pittsburgh	1.85c
Do., Chicago	1.95c
Cold-rolled strip, Pitts., Cleve.	2.40c
Worcester	2.60c

Rails, Track Material □

(Gross Ton)

*Stand. rails, mill.	$36.37½
Relay rails, Pitts.	
* 20-45 lbs.	$26.00
* 50-60 lbs.	$23.00
* 70-75 lbs.	$18.00
* 80-85 lbs.	$24.00
* 100 lbs.	$25.00
Light rails, billet qual., Pitts., Chi.	$32.00
Do., reroll. qual.	$31.00
Angle bars, mills	2.55c
Spikes, R. R., base	2.40c
Track bolts, base	3.40c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs. up $1; 12 lbs., up $2; 8 and 10 lbs. up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons or more; diff. for less.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	70 off
Tire bolts	60 off
Stove bolts, 72½-25-10 off in pkgs.; 85 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller,	66 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	85 off
Upset 1-in., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	80 off
Upset, larger than 1-in.	80 off
Headless set screws	75-10 off

Rivets, Wrought Washers

Struc., c.l., Pitts. Cleve.	2.75c
Struc., c.l., Chi.	2.85c
7/16-in. & smaller, Pitts., Chi., Cleve.	70 and 10 off
Wrought washers, Pitts., Chi., Phila.	6.00 to 6.25 off

Cut Nails, Piling □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more; no discount on size extras	$3.00
Do., less than 5 kegs; no discount on size extras	$3.15
Steel piling, Pitts.	2.00c
Steel piling, Chi., Buff.	2.10c

Pipe and Tubing

Base $200 net ton, except on standard comercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Gary, Ind., Lorain, O., to consumers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD
Steel

In.	Blk.	Gal.
¼ and ⅜	57	38½
½	62	50½
¾	65½	55½
1—3	67½	58½

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD
Steel

2	63½	54½
2½—3	66½	57½
3½—6	68½	59½
7 and 8	67½	57½
9 and 10	67	57

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

LINE PIPE
Steel

⅛-inch, butt weld	50½
¼—⅜, butt weld	56
½, butt weld	61
¾, butt weld	64½
1—3, butt weld	66½
2-inch, lap weld	62½
2½—3, lap weld	65½
3½—6, lap weld	67½
7—8, lap weld	66½

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra.

BOILER TUBES
C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3¾	50	3	17
4	52	3¾—3½	18
4½—6	42	4	20
1½	1	4½	21

On lots of a carload or more, above discounts subject to preferential of two 5% discounts on steel and 10% on charcoal iron.

Lapwelded steel: Under 10,000 lbs., 6 pts. under base and one 5%; on 10,000 lbs. to carload, 4 pts. under base and two 5%. Quantity discounts same as for hot-rolled. Charcoal iron: Under 10,000 lbs., 2 pts. under base; on 10,000 lbs. to carload, base and one 5%.

SEAMLESS BOILER TUBES
Cold Drawn

2—2¼	27	3¼—3½	44
2½—2¾	34	4	46
3	41	4½, 5, 6	46

(On 1—1¾-inch sizes mechanical tubing dis. apply.)

Hot Rolled

2—2¼	33	3¼—3½	50
2½—2¾	40	4	52
3	47	4½, 5, 6	42

Quantity discounts: Under 10,000 lbs., 10 pts. and 5%; 10,000 to 24,999 lbs., 6 pts. and 5%; 25,000 lbs. to carload, 2 pts. and 5 and 5%; carload and over, base discount and 5 and 5%. No extra for lengths 24 ft. and under.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$35.00-36.00
4-in., Birm.	38.00-39.00
4-in., Chicago	46.00-47.00
6 to 24-in., Chicago	43.00-44.00
6-in. & over, N. Y.	34.50-36.50
4-in., New York	36.50-38.50

Class A pipe $3 over Class B. Stand. fitgs., Birm, base..$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Nonferrous Mill Products

F.o.b. mill base, cents per lb., except as specified. Copper, brass products based on 9.00c, *Conn., copper*

Sheets

Yellow brass (high)	14.75
Copper, hot rolled	17.12½
Lead, cut to jobbers	8.00
Zinc, 100-lb. base	9.00

Tubes and Pipes

High yellow brass	16.37½
Seamless copper	16.62½

Rods

High yellow brass	12.25
Copper	13.87½

Anodes

Copper, untrimmed	14.50

Wire

Yellow brass (high)	14.75

Old Metals □ □

Deal. buying prices, cents lb.

No. 1 Composition Red Brass

New York	4.25- 4.75
Chicago	4.00- 4.25
Cleveland	4.25- 4.75
*St. Louis	3.50- 3.75

Heavy Copper and Wire

New York	5.87½-6.12½
*Chicago, No. 1	5.75- 6.00
Cleveland	5.00- 5.50
St. Louis	5.25

Composition Brass Borings

New York	4.00- 4.25

Light Copper

New York	5.12½-5.37½
*Chicago	4.25- 4.75
Cleveland	4.50- 5.00
*St. Louis	4.25

Light Brass

*Chicago	2.75- 3.00
Cleveland	2.50- 3.00

Lead

New York	3.25- 3.37½
Cleveland	3.00- 3.25
Chicago	2.75- 3.00
*St. Louis	2.50- 2.75

Zinc

New York	2.25- 2.50
Cleveland	2.25- 2.50
Chicago	2.25- 2.50
St. Louis	2.25- 2.50

Aluminum

Clips, soft, Cleve.	11.50-12.00
Borings, Cleve.	4.75- 5.00
Mixed, cast, Cleve.	7.25- 7.50
Mixed, cast, St. L.	7.00- 7.50

Secondary Metals □

*Brass ingot, 85-5-5-5	8.50
Remelt Al., No. 12	12.00-12.50

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25

Gross Tons

	No. 2 Fdry.	Malleable	Basic	Bessemer
Basing Points:				
Bethlehem, Pa.	$17.50	$18.00	$17.00	$18.50
Birdsboro, Pa.	17.50	18.00	17.00	18.50
Swedeland, Pa.	17.50	18.00	17.00	18.50
Sparrows Point, Md.	17.50	18.00	17.00	18.50
From Swedeland, Pa., del. to Phila.	18.26	18.76	17.76	.....
From Bethlehem, del. to Brooklyn..	19.77	20.27	.....	.....
From Bethlehem, del. to Newark, N. J.	18.99	19.39	.....	.....
Basing Point:				
Everett, Mass	18.00	18.50	17.50	19.00
From Everett, del. to Boston	18.50	19.00	18.00	19.50
Basing Point:				
Buffalo	17.50	18.00	16.50	18.50
From Buffalo, del. to Boston	18.50	19.00	18.00	19.50
Basing Points:				
Neville Island, Pa.	18.00	18.00	17.50	18.50
Sharpsville, Pa.	17.50	17.50	17.00	18.00
Youngstown, O.	17.50	17.50	17.00	18.00
From Neville Island, Pa., del. to Pittsburgh	(Neville Island base, plus 50 to 76 cents switching charges)			
Basing Points:				
Erie, Pa.	17.50	18.00	17.00	18.50
Cleveland	17.50	17.50	17.00	18.00
Toledo, O.	17.50	17.50	17.00	18.00
Detroit	17.50	17.50	17.00	18.00
From Detroit, del. to Saginaw, Mich.	19.60	19.60	19.10	20.10
From Cleveland, del. to Akron, Canton, O.	18.76	18.76	18.26	19.26
From Toledo, del. to Mansfield, O...	19.26	19.26	18.76	19.76
Basing Point:				
Hamilton, O.	17.50	17.50	17.00	18.00
From Hamilton, del. to Cincinnati	18.51	18.51	18.01	19.01
Do., del. to Indianapolis	19.77	19.77	19.27	20.27
Basing Points:				
Duluth	18.00	18.00	.....	18.50
Chicago	17.50	17.50	17.00	18.00
Granite City, Ill.	17.50	18.00	17.00	.....
From Duluth, del. to St. Paul.....	19.94	19.94	.....	20.44
From Chicago, del. to Milwaukee..	18.50	18.50	18.00	19.00
From Chicago, Toledo or Detroit, del to Muskegon, Mich.	20.40	20.40	19.90	20.90
From Granite City, del. to St. Louis	(Granite City base, plus 50-cent switching charge)			
Basing Point:				
Birmingham, Ala.	13.50	.....	12.50	.....
From Birmingham del. to:				
Boston	18.12	.....	17.62	.....
Newark, N. J.	18.51	.....	.....	.....
Brooklyn, N. Y.	19.39	.....	.....	.....
Baltimore	18.02	.....	17.52	.....
Cleveland	19.64	.....	18.64	.....
Cincinnati	18.23	.....	17.11	.....
Chicago	18.16	.....	19.14	.....
St. Louis	17.62	.....	17.50	.....
Basing Point:				
Provo, Utah	16.50	.....	.....	.....

LOW PHOS.

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$22.00. Basing point: Johnson City, Tenn.—.....

Philadelphia, standard and copper bearing..... 23.13

GRAY FORGE		CHARCOAL	
Valley furnace	17.25	Lake Superior fur.	20.50
Pitts. dist. fur.	17.75	Do., del. Chicago	23.54

SILVERY

Jackson County, O., base: 6%—$22.25; 7—$23.25; 8—$24.25; 9—$25.25; 10—$26.25; 11—$27.75.

BESSEMER FERROSILICON

Jackson County, O., base: 10%—27.25; 11—$28.75; 12—$30.25; 13—31.75; 14—$33.25; 15—$34.75; 16—$36.25.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.30
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	8.00- 9.00
Cop-free low phos. 58-65% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50
No. Afr. low phos.	7.00
Swedish basic, 65%	8.00
Swedish low phos.	8.50
Spanish, No. Afr. basic, 50 to 60%	7.00
Tungsten, spot, sh. ton unit, duty pd.	$14.00-14.25
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$17.00-18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasion, 52-55%	22.00
So. African, 52%..	21.00-22.00
So. Afr., 49-51%....	20.00-21.00
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	48.00

Second Quality

Pa., Ohio, Ill., Ky., Md., Mo., Ga., Ala.	40.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet E. Chicago	54.00
Birmingham, Ala.	55.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$65.00
Unburned	55.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$45.00

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

Fluorspar

85 and 5 per cent grade

Washed gravel, duty paid, tide, gross ton	$20.00
*Washed gravel f.o.b. Ill., Ky., net ton, carloads	$15.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.30
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00
Canton, O.	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts. and Chicago	1.60c

Coke

Price Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$3.75
Connellsville fdry.	4.25
Connell. prem. fdry.	5.25
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
*Chi. ov., outside del.	8.50
*Chicago, del.	9.25
New England, del.	10.50
St. Louis, del.	8.75
Birmingham, ovens	4.75
Indianapolis, del.	8.75
Ashland, Ky., Connells., basis	5.50
Portsmouth, ovens, Connell. basis	5.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del	9.00

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd.	82.00
del. Pitts.	87.24
Spiegeleisen, 19-20%, dom., fur., spot†	27.00
Ferrosilicon, 50%, frieght all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	1.16- 1.25
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton., frt., all., lb.	7.00
Do, under 1 ton	7.50
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb	0.95
Molybdate, lb. cont.	0.80

†Carloads. Quan. diff. apply.

Coke By-Products

Per gallon, producers' plants, Tank lots

	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per lb., f.o.b. New York

Phenol (200 lb. drums)	0.163c
Do., (100 lb.)	0.173c

Per lb., producers' plants

Naphthalene flakes and balls	6.00- 7.25

Per 100 lb., Atlantic seaboard

Sulphate of ammonia	$1.20

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.60c
Boston††	2.90c
Buffalo	2.95c
Chattanooga..	3.05c
Chicago	2.90c
Cincinnati	3.10c
Cleveland	2.90c
Detroit	2.98½c
Houston	2.40c
Los Ang.	3.30c
New Orleans	3.00c
New York‡(d)	3.17c
Philadelphia*	2.60c
Pittsburgh	2.85c
Portland	3.40c
San Fran.	3.55c
Seattle	3.40c
St. Louis	3.14c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS □	
Baltimore* ...	2.60c
Chattanooga..	3.05c
Chicago	2.75c
Cincinnati	3.10c
Detroit	2.98½c
New York‡(d)	3.10c
Philadelphia*	2.60c
St. Louis	3.14c
Tulsa	3.25c

REINFORC. BARS □	
Baltimore	2.35c-3.00c
Boston	2.75c-3.25c
Buffalo	1.95c
Chattanooga..	3.05c
Chicago	1.95c-2.10c
Cincinnati	3.10c
Cleveland	2.22½c
Houston	3.00c
Los Ang. cl....	3.00c
New Orleans	3.00c
New York	3.17c
Phila.	2.62½c
Pittsburgh	3.00c
S. Fran. f.o.b.	3.15c
Seattle	3.50c
St. Louis	3.29c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES □	
Baltimore* ...	2.60c
Boston††	3.07c
Buffalo	3.20c
Chattanooga..	3.30c
Chicago	3.10c
Cincinnati	3.30c
Cleveland	3.21c
Detroit	3.30c
Houston	2.65c
Los Ang.	3.30c
New Orleans	3.50c
New York(d)	3.27c
Philadelphia*	2.60c
Pittsburgh	3.05c
Portland	3.40c
San Fran.	3.55c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

PLATES □	
Baltimore* ...	2.60c
Boston††	3.08c
Buffalo	3.20c
Chattanooga..	3.30c
Chicago	3.10c
Cincinnati	3.30c
Cleveland, ¼ in. and thicker	3.21c
Cleve., 3/16-in	3.20c
Detroit	3.30c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles ..	3.30c
New Orleans	3.50c
New York (d)	3.30c
Philadelphia*	2.60c
Phila. floor....	4.35c
Pittsburgh	3.05c
Portland	3.40c
San Fran.	3.50c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE □	
Baltimore* ...	2.75c
Boston††	2.90c
Buffalo	3.10c
Chattanooga..	3.50c
Chicago	2.95c
Cincinnati	3.10c
Cleveland	3.01c
Det., 8-10 ga.	3.03½c
Houston	3.35c
Los Ang.....	3.45c
New Orleans	3.50c
New York	3.17c
Portland	3.65c
Philadelphia*	2.75c
Pitts.	2.85c
San Fran.	3.75c
Seattle	3.65c
St. Louis	3.19c-3.36c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK □	
Balt.*†	3.50c
Boston††	3.75c
Buffalo	3.25c
Chattanooga..	4.00c
Chicago	3.70c
Cincinnati	3.85c
Cleveland	3.76c
Detroit	3.78½c
Los Ang.	4.05c
New York	3.65c
Philadelphia*†	3.40c
Pitts.	3.35c
Portland	4.25c
San Fran.	4.25c
Seattle	4.25c
St. Louis	3.94c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS □	
Balt.*†	3.75c
Buffalo	4.00c
Boston††	4.35c
Chattanooga..	4.25c
Chicago	4.20c-4.30c
Cincinnati	4.45c
Cleveland	4.36c
Detroit	4.45c
Houston	3.57c
Los Ang.	4.65c
New Orleans	4.35c
New York	4.25c
Pitts.**	3.95c-4.20c
Portland	4.85c
San Fran.	4.85c
Seattle	4.85c
St. Louis	4.54c
St. Paul	4.19c
Tulsa	5.10c
Philadelphia*†	4.00c

BANDS □	
Baltimore	2.90c
Boston††	3.15c
Buffalo	3.30c
Chattanooga..	3.25c
Chicago	3.20c
Cincinnati	3.35c
Cleveland	3.26c
Det. 3/16-in. & lighter ..	3.28½c
Houston	2.85c
Los Ang.	3.80c
New Orleans	3.20c
New York(d)	3.42c
Philadelphia...	2.90c
Pittsburgh	3.10c
Portland	3.90c
San Fran.	3.15c
Seattle	3.90c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.45c

HOOPS □	
Baltimore	2.80c
Boston	4.15c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.35c
Det. No. 14 & lighter ..	3.28½c
New York	3.42c
Philadelphia...	3.15c
Pittsburgh	3.75c
Seattle	5.40c
St. Paul	3.75c

COLD FIN. STEEL □	
Baltimore (c)	3.33c
Boston 3.83c-4.33c	
Buffalo	3.25c
Chattanooga*	3.90c
Chicago	3.35c
Cincinnati	3.55c
Cleveland	3.25c
Detroit	3.40c
Los Ang.	5.85c
New Orleans ..	4.25c
New York	3.79c
Philadelphia..	3.58c
Pittsburgh	3.20c
Portland (f)..	4.75c
San Fran. (d)	5.85c
Seattle (f).....	4.75c
St. Paul	3.20c
St. Louis	3.75c
Tulsa	4.65c

COLD ROLL. STRIP □	
Boston 0.100 in., 500 lb lots	5.20c
Buffalo	5.25c
Chicago (b) ..	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Philadelphia..	4.55c
New York	4.55c

(a) Rounds, hex. only

(b) Net base straightening, cutting boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New mill classif

(f) Rounds only.

‡Domestic bars.

*Plus quan. extras.

**Under 25 bundles.

*†50 or more bundles.

†New extras apply.

††Base 40,000 lbs., extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Nov. 2

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d	
PIG IRON				
Foundry, 2.50-3.00 Silicon.	$14.16	2 18 6	$7.91	1 12 6
Basic bessemer..	13.07	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05....	14.52	3 0 0	....	.....
SEMIFINISHED STEEL				
Billets.....	$25.41	5 5 0	$11.44	2 7 0
Wire rods, No. 5 gage.....	36.30	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails.....	$37.51	7 15 0	$26.77	5 10 0
Merchant bars.....	1.46c	6 15 0	.66c	3 0 0
Structural shapes.....	1.59c	7 7 6	.61c	2 15 0
Plates, †¼ in. or 5 mm.....	1.73c	8 0 0	.86c	3 18 6
Sheets, black, 24 gage or 0.5 mm.....	2.00c	9 5 0	1.27c	5 15 0
Sheets, gal., 24 gage, corr...	2.43c	11 5 0	1.60c to 1.76c	7 5 0 to 8 0 0
Bands and strips.....	1.67c	7 15 0	.83c	3 15 0
Plain wire, base.....	1.89c	8 15 0	1.18c	5 7 6
Galvanized wire, base.....	2.27c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base.....	2.59c	12 0 0	1.27c	5 15 0
Tin plate box 108 lbs.....	$4.11	0 17 0	.....	.....

British ferromanganese $82 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5.....	$15.13	3 2 6	(a) $13.12	215	$13.27	305	$23.44	63
Basic bessemer pig iron....	14.28	2 19 0	(a)* 11.29	185	12.22	290	25.85	69.50
Furnace coke.....	3.51	0 14 6	7.32	120	4.79	110	7.16	19.25
Billets.....	25.41	5 5 0	24.71	405	19.14	440	35.90	96.50
Standard rails.....	1.78c	8 5 0	1.96c	700	2.20c	1,100(b)	2.23c	132
Merchant bars.....	1.49c	6 17 6	1.57c	560	1.07c	535	1.86c	110
Structural shapes.....	1.89c	8 15 0	1.54c	550	1.07c	535	1.82c	107.50
Plates, †¼-in. or 5 mm.....	1.84c	8 10 0	1.90c	680	1.35c	675	2.15c	127
Sheets, black.....	2.21c	10 5 0§	2.38c	850‡	1.50c	750‡	2.43c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.....	2.75c	12 15 0	4.06c	1,450	2.90c	1,450	6.25c	370
Plain wire.....	1.89c	8 15 0	3.16c	1,130	2.60c	1,300	2.99c	177
Bands and strips.....	2.05c	9 10 0	1.82c	650	1.35c	675	2.15c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel a del. Middlesbrough. b Since January.

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	8.50- 9.00
Boston, dealers	5.75- 6.00
Buffalo, No. 1	9.25-10.00
Buffalo, No. 2	8.00- 8.50
Chicago	8.50- 9.00
Cleve., No. 1	10.00-10.50
Cleve., No. 2	9.50-10.00
Detroit, No. 1	7.00- 7.50
Detroit, No. 2	6.25- 6.75
Eastern Pa.	10.00
Eastern Pa., No. 2	8.00- 8.50
Federal, Ill.	8.00- 8.50
Granite City, Ill.	8.00- 8.50
N. Y., deal. R. R.	7.50
N. Y., deal. No. 2	6.50
Pitts., No. 1	12.00-12.50
St. L., No. 1 del.	8.75- 9.25
Valleys, No. 1	12.50-13.00

COMPRESSED SHEETS

Buffalo, dealers	8.00- 8.50
Chi. (Factory)	7.00- 7.50
Cleveland	9.25- 9.75
Detroit	7.00- 7.50
E. Pa., new mat.	9.50-10.00
Pittsburgh	12.00-12.50
Valleys	12.00-12.50

BUNDLED SHEETS

Buffalo	5.50- 6.00
Cincinnati, del.	5.50- 6.00
Cleveland	7.75- 8.25
Eastern Pa.	9.00- 9.50
Pittsburgh	11.00-11.50
St. Louis	5.00- 5.50

SHEET CLIPPINGS LOOSE

Chicago	4.00- 4.50
Cincinnati	4.50- 5.00
Detroit	5.00- 5.50
St. Louis	4.50- 5.00

STEEL RAILS, SHORT

Birmingham	10.00-11.00
Boston, dealers	5.75- 6.00
Buffalo	12.00-12.50
Chicago (3 ft.)	10.00-10.50
Chicago (2 ft.)	10.50-11.00
Cincinnati, del.	11.00-11.50
Detroit	8.50- 9.00
Pitts., (open-hearth, 3 ft. and less)	14.00-14.50
St. Louis	10.50-11.00

STOVE PLATE

Birmingham	6.50- 7.00
Boston, dealers	4.50- 4.75
Buffalo	8.50- 9.00
Chicago, net	6.00- 6.50
Cinci., deal.	6.00- 6.50
Detroit, net	4.50- 5.00
Eastern Pa.	8.00- 8.50
N. Y., deal. Fdry.	5.00- 5.50
St. Louis	6.50- 7.00

COUPLERS, SPRINGS

Buffalo	11.50-12.00
Chicago	9.00- 9.50
Eastern Pa.	13.00-13.50
Pittsburgh	14.00-14.50
St. Louis	9.00- 9.50

ANGLE BARS—STEEL

Chicago	9.00- 9.50
St. Louis	9.00- 9.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.50-12.50
Cleveland bil. and bloom crops	12.50-13.50
Eastern Pa. crops	14.00-14.50
Pittsburgh billet bloom crops	14.00-14.50
Pitts., sheet bar crops	14.00-14.50

FROGS, SWITCHES

Chicago	8.50- 9.00
St. Louis	9.00- 9.50

SHOVELING STEEL

Chicago	8.50- 9.00
Cleveland	10.50-11.00
St. Louis	8.00- 8.50

RAILROAD WROUGHT

Birmingham	7.00- 8.00
Boston, dealers	2.00- 2.50
Buffalo, No. 1	7.00- 8.00
Buffalo, No. 2	9.50-10.00
Chi., No. 1, net	7.00- 7.50
Chi., No. 2	8.50- 9.00
Cinci., No. 2	8.00- 8.50
Eastern Pa.	10.50
N. Y., No. 1 deal.	7.00- 7.50
Pitts., No. 1	12.00-12.50
St. Louis, No. 1	6.00- 6.50
St. Louis, No. 2	8.00- 8.50

SPECIFICATION PIPE

Boston	4.00- 4.50
Eastern Pa.	9.50
N. Y., deal.	4.75- 5.25

BUSHELING

Buffalo, No. 1	8.00- 8.50
Chicago, No. 1	7.00- 7.50
Cinci., No. 1 deal.	5.75- 6.25
Cinci., No. 2	2.50- 3.00
Cleve., No. 2	7.00- 7.25
Det., No. 1 new	6.25- 6.75
St. Louis, No. 1	5.50- 6.00
Val. new No. 1	12.50-13.00

MACHINE TURNINGS

Birmingham	3.50- 4.50
Boston, dealers	2.25- 2.50
Buffalo	6.25- 6.50
Chicago	5.00- 5.50
Cinci., deal.	4.50- 5.00
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
Eastern Pa.	6.50
N. Y., deal.	4.00- 4.50
Pittsburgh	9.00- 9.50
St. Louis	4.00- 4.50
Valleys	10.75-11.00

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	2.00- 2.25
Buffalo	6.25- 6.50
Cinci., deal.	4.50- 5.00
Cleveland	7.25- 7.50
Detroit	6.00- 6.50
Eastern Pa.	5.50- 6.00
N. Y., deal.	3.00
Pittsburgh	8.00- 8.50

CAST IRON BORINGS

Birming., plain	3.50- 4.50
Boston, chem.	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	6.25- 6.50
Chicago	5.25- 5.75
Cinci., deal.	4.50- 5.00
Cleveland	7.25- 7.50
Detroit	6.00- 6.50
E. Pa., chem.	12.00-15.00
N. Y., deal.	3.00
Pittsburgh	8.00- 8.50
St. Louis	4.00- 4.50

PIPE AND FLUES

Cinci., deal.	4.00- 4.50

RAILROAD GRATE BARS

Buffalo	5.00- 5.50
Chicago, net	6.00- 6.50
Cincinnati	4.75- 5.25
Eastern Pa.	8.00- 8.50
N. Y., deal.	5.25- 5.50
St. Louis	5.50- 6.00

FORGE FLASHINGS

Boston, dealers	4.00- 4.50
Buffalo	8.00- 8.50
Cleve., over 10-in.	9.00- 9.50
Detroit	5.50- 6.00

FORGE SCRAP

Boston, dealers	4.00- 4.50
Chicago (heavy)	9.50-10.00
Eastern Pa.	10.00-10.50

ARCH BARS, TRANSOMS

Chicago, net	6.50- 7.00
St. Louis	9.00- 9.50

AXLE TURNINGS

Boston, dealers	3.50- 3.75
Buffalo	7.50- 8.00
Chi., elec. fur.	7.00- 7.50
Cleveland	9.50-10.00
Eastern Pa.	9.50-10.00
St. Louis	5.00- 5.25

STEEL CAR AXLES

Birmingham	8.00- 9.00
Boston, ship. point.	8.00- 8.50
Buffalo	10.00-11.00
Chicago, net	10.00-10.50
Eastern Pa.	15.00
St. Louis	11.00-11.50

SHAFTING

Boston, ship. point	9.25-9.50
Eastern Pa.	15.00
N. Y., deal	10.00-10.25
St. Louis	7.50- 8.00

CAR WHEELS

Birmingham, iron	7.50- 8.50
Boston, iron deal.	6.00- 6.50
Buffalo, iron	8.00- 9.00
Buffalo, steel	10.50-11.00
Chicago, iron	9.00- 9.50
Chi., rolled steel	9.50-10.00
Cincinnati, iron	8.00- 8.50
E. Pa., iron	11.50-12.00
E. Pa., steel	13.00-13.50
Pitts., iron	11.00-11.50
Pitts., steel	14.00-14.50
St. Louis, iron	7.00- 7.50
St. Louis, steel	9.50-10.00

NO. 1 CAST SCRAP

Birmingham	9.00- 9.50
Boston, No. 2	5.00- 5.50
Boston, Tex. con.	10.75-11.00
Buffalo, cupola	9.50-10.00
Buffalo (mach.)	10.00-10.50
Chicago, agri. net	7.00- 7.50
Chi., mach. net	7.75- 8.25
Chi., railroad net	8.00- 8.50
Cinci., mach. cup	8.00- 8.50
Cleve., cupola	10.50-11.00
Detroit, net	7.00 7.50
E. Pa., cupola	12.00
N. Y., cup. deal.	6.00- 6.50
N. Y., del. local foundries	9.00- 9.50
Pitts., cupola	11.00-11.50
San Fran., del.	13.50-14.00
Seattle	4.50- 6.50
St. Louis, No. 1	8.00- 8.50
St. L., No. 1 mach.	8.50- 9.00

HEAVY CAST

Boston, del.	5.75- 6.00
Buffalo, break	7.00- 7.50
Cleve., break	7.50- 8.00
Detroit, break	5.00- 5.50
Detroit, auto net	7.50- 8.00
Eastern Pa.	10.00-10.50
N. Y., No. 1, deal.	7.00- 7.50
N. Y., break. deal.	6.00- 6.50
Pittsburgh	10.50-11.00

MALLEABLE

Boston, consum.	12.00-12.25
Buffalo	10.00-11.00
Chicago, R. R.	9.25- 9.75
Cinci., agri. del.	8.00- 8.50
Cinci., R. R. del.	8.50- 9.00
Cleveland, rail	11.50-12.00
Detroit, auto	6.50- 7.00
St. Louis, R. R.	8.00- 8.50
Eastern Pa., R. R.	12.50-13.00

RAILS FOR ROLLING
5 feet and over

Birmingham	9.50-10.50
Boston, dealers	7.00- 7.25
Buffalo	9.00- 9.50
Chicago	10.00-10.50
Eastern Pa.	12.50
New York, dealer	7.00- 7.50
St. Louis	9.25- 9.75

LOCOMOTIVE TIRES

Chicago (cut)	9.50-10.00
St. L., No. 1	8.00- 8.50

LOW PHOS. PUNCHINGS

Buffalo	11.00-11.50
Chicago	9.50-10.00
Eastern Pa.	12.50-13.50
Pittsburgh	14.00-14.50

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: Futures	Lead: New York	Lead: East St. L.	Zinc: St. L.	Aluminum: 98-99%	Antimony: Spot, N. Y.	Ingot Nickel
Oct. 28	8.25	8.62½	8.00	48.37½	48.62½	4.30	4.15	4.75	*22.90	6.70	35.00
Oct. 30	8.25	8.62½	8.00	48.85	49.15	4.30	4.15	4.75	*22.90	6.70	35.00
Oct. 31	8.25	8.37½	8.00	48.87½	49.17½	4.30	4.15	4.75	*22.90	6.70	35.00
Nov. 1	8.00	8.37½	7.75	49.00	49.45	4.30	4.15	4.75	*22.90	6.70	35.00
Nov. 2	8.00	8.37½	7.75	49.75	50.20	4.30	4.15	4.65	*22.90	6.70	35.00
Nov. 3	8.00	8.37½	7.75	49.80	50.25	4.30	4.15	4.50	*22.90	6.70	35.00

*Nominal quotation. Market range 19.90c to 22.90c.

Bars

Bar Prices, Page 56

Pittsburgh—Steel bar orders are less frequent although shipments are fair on specifications. These are near completion, however. The automotive trade is not buying and this noticeable slack is not being taken up by bars for reinforcing purposes or cold finishing. The market remains officially quoted 1.75c base, Pittsburgh. Hot-rolled alloy steel bars were based on 2.45c, Pittsburgh, Buffalo and Massillon, O., for consuming points in this and immediately adjoining districts. No significant test is expected to develop to the 1.75c base on bars until late in this quarter. At that time, automobile manufacturers, and possibly others, may reenter the market in some volume for early 1934 delivery. In the meantime, railroads, agricultural implement manufacturers and other important buyers are, generally speaking, not buying.

Cleveland—Bookings during October were 25 to 50 per cent under September. The slight spurt in agricultural buying which developed several weeks ago has vanished. Bolt and nut manufacturers are operating on accumulated stocks. Railroads continue to buy in small quantities for repair work.

Chicago—Soft steel bar sales and specifications are slightly lower with the decline fairly well diversified. Automotive orders continue light but present quiet in this industry is offset by favorable prospects for coming months. Specifications still are restricted by stocks of consumers received recently upon the expiration of contracts. New business is being taken at 1.80c, Chicago, with rail steel bars 1.70c.

Boston—All bidders quoted $20,077.20, delivered on 234 tons of hot-rolled nickel steel bars for the Charlestown (Boston) navy yard, Crucible Steel Co. of America, Pittsburgh, being given the awards. Merchant steel bar specifications are light, but with gradual improvement indicated during the latter part of the quarter. Buying at 1.85c, Buffalo, has been negligible.

Philadelphia—Buying of commercial steel bars is at the lowest point since early last spring, according to some leading sellers. This reflects, in part, fairly substantial coverage prior to the advance in prices more than a month ago; also increasing uncertainty as to the future outlook of business in general. Contract specifications are down from a week ago. Commercial steel bars are 1.75c, Pittsburgh, or 2.04c, Philadelphia. Common iron bars are still available at 1.74c, delivered, Philadelphia, on carlots; on smaller quantities prices range up to 1.89c, delivered, Philadelphia.

Plates

Plate Prices, Page 56

Pittsburgh—Midland Barge Co., Midland, Pa., is low on 48 steel pontoons for the Memphis, Tenn., federal engineers. In addition to 48 sections of welded pipe, each 52 feet in length, approximately 1150 tons of plates are required for this job. River-barge work under private sponsorship is still considered fairly active and although this outlet for plates is not featuring any orders at the time being, leading barge yards here figure that as high as 160 to 170 barges may be closed upon. The plate market is firm at 1.70c, Pittsburgh, but lacks test. Tank builders and railroads are out of the market. Out of 850 tons of steel required for a Pennsylvania railroad bridge at East Aurora, N. Y., several hundred tons will be plates.

Cleveland—The only feature of the Cleveland plate market is 1170 tons of tank tops pending for the easterly sewage disposal plant. Some business has been proffered by breweries seeking to finance their requirements over several months. Railroads continue to place small lots for repairs. The greater volume of inquiries during the last few days promises an improvement in tonnage to be placed during the next two or three weeks.

Chicago—Action still is awaited on various fabricated plate projects, including municipal water tanks and river barges. A few small orders have been placed for freight car construction and repair work, although the latter activity has shown little improvement. Oil company purchases of tanks and plates for repair work are confined to small lots. Plates continue 1.75c, Chicago.

Boston—Specifications for shipbuilding are heavier, yards with government work releasing against contracts. Buying at 1.80c, Coatesville, Pa., is light, mostly miscellaneous small orders.

New York—Shipbuilding holds the best present promise for plate tonnage in this district. Continuance of strikes in local shipyards is holding up much steel for repairs and small construction. Bids will be taken Nov. 17 on special plates for one of two cruisers and Nov. 24 for the other. These special plate requirements total 4200 tons. About Nov. 28 bids will be taken on 8000 tons of medium plates, shapes and bars for these cruisers, one to be built at New York and the other at Philadelphia.

Philadelphia—Pending shipwork and the 10,000,000-cubic foot gas holder in Washington, the latter requiring 2500 tons, continue outstanding in the local plate market. Miscellaneous buying is slack, with platemaking operations slower. The market is 1.80c, Coatesville, Pa., or 1.88½c, Philadelphia.

Contracts Placed

2720 tons, dam No. 5, Minnaiska, Minn., to Worden-Allen Co., Milwaukee.
2000 tons, remainder of pipe for west side water supply project Cleveland, to National Tube Co., Pittsburgh.
289 tons, black sheets for 22-inch pipe line, Los Angeles; to unnamed interest.
200 tons for unnamed brewery, Louisville, Ky., to Littleford Bros., Cincinnati.
150 tons, Fifth avenue S. W. pipe line, Seattle, to Puget Sound Machinery Depot, Seattle.

Contracts Pending

8000 tons, medium plates, shapes and bars for two cruisers; bids about Nov. 28.
4200 tons, special plates for two cruisers; bids Nov. 17 and Nov. 24.
2000 tons, plates and shapes, mostly former, eight 16 x 100-foot drum gates and controls, Boulder dam, Nevada; bids Nov. 15, bureau of reclamation, Denver.
1150 tons, 48 pontoons, each 48 x 18 x 2 feet 10 inches, for Memphis, Tenn., federal engineers; Midland Barge Co., Midland, Pa., low; bids Oct. 31.
1000 tons, plates and shapes, mostly former, floating dry dock, Tampa Shipbuilding & Engineering Co., Tampa, Fla.
450 tons (including shapes), three coast guard patrol boats; Lake Union Dry Dock & Machinery Co., Seattle, low.
100 tons or more, flood gates and hoists, hydroelectric plant, Radford, Va., Virginia Bridge & Iron Co., Roanoke, Va., low.

Sheets

Sheet Prices, Page 56

Pittsburgh—Prices are uniform and firm but lack of buying from major consuming groups is continuing. Unchanged price schedules call for 2.25c base, Pittsburgh, on black sheets, 1.75c on 10-gage hot-rolled, with 2.30c and 2.75c the present cold-rolled bases. Cold-rolled sheets, 10-gage, deliver in Detroit at 2.50c on this basis and 20-gage cold-rolled sheets at 2.95c, both under operation of resolution 13 of the American

Iron and Steel institute. At the same time, black sheets deliver in Detroit at 2.45c and 10-gage hot-rolled at 1.95c. These delivered prices are based on previously mentioned Pittsburgh bases. Common finishes are currently in slightly better demand than full-finished sheets.

Chicago—Sales and specifications are unimproved with a downward tendency still apparent in operations and in requirements of most consumers. Little improvement is in early prospect in automotive orders and demand generally is expected to continue quiet this month. Present activity to a certain extent reflects heavy sheet tonnages taken recently in closing out old contracts, and consumption is somewhat better maintained than is the volume of incoming business.

Boston—Demand for all grades of sheets is sluggish with specifications light and new buying lacking. Jobbers until recently, however, have experienced good demand for sheets. Stamping shops and other industrial consumers are less active and with one or two exceptions are ordering out limited shipments only.

Cleveland—Continuation of labor disturbances at Detroit is responsible for noticeable increase in business being figured by automobile parts makers in this territory. Stove and refrigerator manufacturers continue to draw on inventories. In numerous cases, stocks of steel sheets are nearly depleted and improvement in volume of new orders is expected to develop before the end of the month.

New York — Most consumers stocked heavily before new prices became effective and this, combined with the falling off in demand for their products, is making for an extremely dull situation. No. 10 hot-rolled continues 2.08c, New York; No. 24 black 2.58c; galvanized 3.18c; No. 10 cold-rolled, 2.63c; and No. 20 cold-rolled 3.08c.

Buffalo — Sharp curtailment in sheet demand has resulted in one unit of the principal works here being down indefinitely. Production is averaging 40 per cent of capacity, compared with a recent peak of 80 per cent.

Philadelphia—While radio manufacturers are specifying more freely, general trading in sheets is light, reflecting not only substantial stocks specified prior to the advance a few weeks ago, but also increasing uncertainty among many consumers as to business outlook. Prices are steady.

Bids close Nov. 10 on 160 tons of hot-rolled sheets for the Norfolk, Va., navy yard.

Cincinnati — Specifications for sheets, from mills in this district, have been cut further, with production dropping below 40 per cent. Seasonal conditions in the automotive field are reflected in light demand from this source.

St. Louis—Buying is spotty and in smaller volume, largely as a result of reduced demand from automobile builders. Miscellaneous requirements, notably of container manufacturers, predominate the limited tonnage moving. Quotations are unchanged.

Birmingham, Ala.—Production of sheets here is lower than for some time. Gulf States Steel Co. is low on 15,000 galvanized corrugated roofing sheets and 500 ridge rolls for Panama at $11,624.64, delivered.

Stairs and Floors of SAFETY and DURABILITY

Remove the "slipping" hazard from YOUR Stairways by installing Central Stair Treads and Floors.

Their exclusive design has exceptional non-skid qualities, and they cannot be surpassed for durability. They are self draining and very easily installed.

Send for booklet—"Floor Plates and Stair Treads".

CENTRAL IRON & STEEL CO.
Harrisburg, Penna.

Offices in Principal Cities

Underwriters' Laboratories Inspected S A 443

Railroads

Track Material Prices, Page 57

Allocation of $135,000,000 by the public works administration to railroads for purchase of rails and other constructive purposes promises immediate release of much tonnage and acceleration of production in various lines.

Of this total $51,000,000 is set aside for purchase of steel rails, a total of 884,525 tons having been indicated in a survey by Railroad Co-ordinator Eastman several weeks ago. Accompanying this tonnage about 240,000 tons of track fastenings will be required.

The remainder of this loan, $84,000,000, has been allocated to the Pennsylvania for completion of its electrification program between Washington and New York. This includes improvement of its roadbed and the purchase of 132 electric locomotives and 7028 freight and passenger cars. The loan carries interest of 4 per cent, but no interest is paid the first year.

Roads will indicate to Co-ordinator Eastman the tonnages they desire and the latter will assign them to the nearest mill to minimize delivery haul.

While reports at Washington assert 100,000 freight cars may be purchased under the government program reliable trade opinion is that not over 50,000 will be ordered. It is not certain whether the Pennsylvania will build in its own shops all the 7028 cars indicated in recent statements. Recent reports were that it would build 3000 there. In

addition to 132 electric locomotives just mentioned, releases are expected to be made against others ordered two years ago. On 12 locomotives for the Northern Pacific at least some builders reserve the right to revise quotations if purchased through government aid, the inference being the cost would be higher.

Price of standard steel rails has been definitely set at $36.375 per gross ton by compromise between the President and heads of the rail producing companies. It is the mean between $35, asked by the co-ordinator, and $37.75, offered by the railmakers Oct. 21. The price puts rails on the basis of 1.6238c per pound.

Rail prices filed with the American Iron and Steel institute conform to the agreement with the President and include $34.375 for No. 2 rail and $35.375 for all No. 2. At Gulf ports $37.375 will apply; at Galveston, Houston and Port Arthur, Tex., $38.125. Pacific ports will take $40.375.

No move has been made relative to prices to apply on track fastenings needed to lay the rail tonnage. Spikes now are 2.40c, all basing points, tie plates 1.90c.

Relaying rails at Pittsburgh are now quoted higher on a gross ton basis. Twenty to 45-pound sections are $26; 50 to 60 pounds, $24; and 100-pound sections, $25. These prices, many of them an advance, are contingent upon the higher price for billet quality light rails which remain quoted $32. Rerolling quality light rails are quoted at $31.

Strip

Strip Prices, Page 57

Pittsburgh—Steel strip is weak and decidedly unpromising. The fact that shipments of strip steel in October excelled those of September is obvious reason for lack of present buying. Prices, however, are firm. On several fill-in lots which one large automotive concern bought last week, 1.75c, Pittsburgh, on hot-rolled and 2.40c, Pittsburgh, on cold-rolled, were quoted.

Chicago—Strip demand continues to decline. Automotive orders are light and requirements of other consumers also are less active. With some material still remaining on third-quarter contracts, new business is expected to be deferred. The market continues 1.85c, Chicago, for hot strip and 2.70c, delivered, for cold-rolled strip.

Boston—Cold-rolled strip buying at 2.60c, Worcester, is light and rolling operations in most mills are lower. While it was generally admitted consumers bought heavily at lower prices, present trend indicates many stocked even more than expected.

Philadelphia—Strip tonnage is moving slowly, with most consumers having substantial stocks on hand. Cold-rolled strip is 2.69c, Philadelphia, and hot-rolled 2.04c.

New York—With buying of cold-rolled strip down materially, the movement of hot strip also is affected, as cold rollers are specifying lightly. Hot strip is unchanged at 2.08c, New York, and cold strip at 2.73c, New York.

Standard Steel Construction Co., Toronto, Ont., has bought the firm of Farand & Delorme Ltd., Montreal, Que., manufacturer of processing machinery and welded products.

TRADE YALE MARK

Pick it up and Take it away!

Just as simple as that!

The Operator runs his Yale Truck under the load and swiftly rolls it away to warehouse, loading platform, freight car—wherever it is needed.

▶ No time lost, no machine or truck losing precious moments while awaiting materials. Instead, speed, efficiency, safety for both operator and load.

Today your greatest opportunity to achieve greater economy and efficiency—to transfer dollars from the cost to the profit column—is in the handling of goods—raw and finished materials—in your plant.

Speed up your materials handling to keep pace with your manufacturing and other activities—use the same means that countless other industrial plants have adopted—the Yale Truck and Skid Platform System.

Our engineers will be glad to survey your plant

THE YALE & TOWNE MFG. CO.
PHILADELPHIA DIVISION
Philadelphia, Pa. U. S. A.
Makers of Yale Electric Trucks, Hand Lift Trucks, Hand Chain Hoists, Electric Hoists and Trolleys

NRA MEMBER U.S. WE DO OUR PART

Shapes

Structural Shape Prices, Page 56

Pittsburgh — Privately sponsored building work is conspicuously absent and only a few scattered highway bridges as well as Ohio river lock and dam work provide basis for fabricators' estimates. Dravo Contracting Co., Pittsburgh, has entered contract for the Apple Grove, W. Va., locks, which take about 2300 tons of structural shapes and steel sheet piling. Plain structural material is based on 1.70c, Pittsburgh, and is firmly quoted on this basis, although sizable tonnages have not tested it. Since Nov. 1, steel piling is 2.00c base, Pittsburgh. A large tonnage of structural steel will be required for a grade separation at Syracuse, N. Y., for the New York Central railroad, bids to close Dec. 5.

Cleveland—Few structurals for private work are being placed. For the most part requirements are for small tonnages. The market aspect, however, is brightened by noticeable increases in inquiries, most of which call for immediate shipment.

Chicago—Shape awards are lighter while new inquiries are confined chiefly to small lots. For a breakwater at Port Washington, Wis., 1000 tons of piling tentatively have been placed. Closing of bids on the Quincy, Ill., river lock has been postponed until Nov. 14. Steel awards for the Canton, Mo., lock and dam remain to be placed, while several similar projects are scheduled for bids over coming weeks. Proposed additions to a viaduct in Kansas City, Mo., will take 1500 tons of shapes.

Boston—Bids are expected to close next month on the Saugus river bridge superstructure, Revere-Lynn, Mass., taking 2200 tons. First contracts for the Cape Cod bridges will probably be out before the year-end.

Philadelphia—Miscellaneous bridge work and various public work and scattered federal aid projects are resulting in some improvement in the structural market. Shapes are unchanged at the 1.80c, Bethlehem, Pa., figure, or 1.90½c, Philadelphia, but fabricated material prices remain soft. Approximately 40,000 tons of shapes on old contracts are expected to be released as a result of the plan of the Pennsylvania railroad to resume its electrification work between New York and Philadelphia.

New York—Award of close to 13,000 tons for the Manhattan midtown post office is held up by litigation brought by the low bidder for the general contractor involving an NRA controversy. Early action on the 8000 tons for the West side elevated highway is not expected, although bids went in this week. It is likely that 12,000 tons for the Triboro bridge towers will reach the steel mills before either of the above projects.

Contracts Placed

3600 tons, machine shop, Puget Sound, Wash. Navy Yard, to McClintic-Marshall Corp., Chicago; general contract to K. E. Parker, San Francisco. (Reported last week as tentative).

1146 tons power plant, Springfield, O., to Duffin Iron Works, Chicago.

1000 tons, piling, breakwater, Port Washington, Wis.; tentatively 800 tons to Inland Steel Co., Chicago, 200 tons to Bethlehem Steel Co., Bethlehem, Pa. Great Lakes Dredge & Dock Co., Chicago, low on general contract.

950 tons, bridges, Lauderdale county, Mississippi, to Stupp Bros. Bridge & Iron Co., St. Louis; Forcum-James Construction Co., general contractor. Laclede Steel Co., St. Louis, awarded reinforcing steel bars for projects.

935 tons, bridge over Meramec river, St. Louis county, Missouri, to Stupp Bros. Bridge & Iron Co., St. Louis, through Samuel Kraus Co.

880 tons, highway bridge, East Boston, Mass., to Boston Bridge Works, Boston.

750 tons, piling for dyke near Port Bolivar, Texas, Carnegie Steel Co., through W. A. Kelso, Galveston, Tex.

735 tons, St. Francis River bridge, Lake City, Ark., to Vincennes Bridge Co., Vincennes, Ind.

567 tons, state bridge Custer County, Mont., to Minneapolis-Moline Implement Co., Minneapolis.

536 tons, Trumbull county, Ohio, bridge, to Mt. Vernon Bridge Co., Mt. Vernon, O.

450 tons, barrels, racks for distilleries at Lyons, N. Y., and Flemington, N. J. to Bethlehem Fabricators Inc., Bethlehem, Pa.

415 tons, building for Separ & Co., Jamaica, N. Y., to Harris Structural Steel Co., New York.

375 tons, bridge NRH-183-D, Gonzales county, Texas, to Houston Structural Steel Co., Houston, Tex.

356 tons, warehouse, boiler house and office building, Baltimore Distilling Co., Baltimore, to Bethlehem Fabricators Inc., Bethlehem, Pa.; Cogswell Construction Co., general contractor. Baltimore Steel Co. awarded reinforcing bars.

350 tons, brewery buildings for unstated at Lyons, N. Y., and Flemington, N. J., to McClintic-Marshall Corp., Bethlehem, Pa., through Thompson-Starrett Co.

313 tons for bridge in Ostego County, New York, to American Bridge Co., Pittsburgh.

300 tons, three 300-foot spans for department of the interior, Alaska, to Wallace Bridge & Structural Co., Seattle.

300 tons, state bridge, Cloquet, Carlton county, Minn., to McClintic-Marshall Corp.; Nolan Bros., Minneapolis, general contractor.

300 tons, state highway bridge, Union county, Indiana, to Pan American Steel Co., New Castle, Ind.; E. A. Mariani, Richmond, Ind., general contractor. W. J. Holliday & Co., Indianapolis, awarded 43 tons of reinforcing steel.

260 tons, highway bridge, Globe, Ariz., to Virginia Bridge & Iron Co., Roanoke, Va.

250 tons, piling, Morris, Ill., bridge structure, to Inland Steel Co., Chicago, through Wisconsin Bridge & Iron Co., Milwaukee.

242 tons, swing span and approaches, Louisiana-Texas waterway, near High Island, Tex., for U. S. engineer, Galveston, to Virginia Bridge & Iron Co., Roanoke, Va.; Tellepson Construction Co., Houston, general contractor.

230 tons, highway bridge, Erwins, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

220 tons, four 84-foot trusses, Hamilton county, Indiana, to Vincennes Bridge Co., Vincennes, Ind.

210 tons, highway bridge, Noblesville, Ind., to Vincennes Bridge Co., Vincennes, Ind.

205 tons, bridges, Lincoln and Fairbury, Neb., to St. Joseph Structural Steel Co.

190 tons, bridge, Queens, New York, National Bridge Co., Long Island City, N. Y., through George Gasparini, Tarrytown, N. Y.

175 tons, Bakersville, Calif., to Minneapolis-Moline Power Implement Co., Minneapolis.

165 tons, highway bridge, Little Falls, N. Y., to American Bridge Co., Pittsburgh.

163 tons, shapes and bars, four bridges, highway 277, Comanche county, Oklahoma, to J. B. Klein Iron & Foundry Co., Oklahoma City; B. & M. Construction Co., general contractor.

162 tons for bridge at Oil Junction, Calif., to Minneapolis Power Implement Co.

151 tons for state bridge at Warren City, N. Y., to Fort Pitt Bridge Works, Pittsburgh.

150 tons, power house, state hospital, Willard, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

140 tons, highway bridge, Saranac Lake, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

125 tons, building, Appleton, Wis., to Milwaukee Bridge Co., Milwaukee.

124 tons, bridges, Lincoln, Danby and Pawlet, Vt., to McClintic-Marshall Corp., 66 tons; American Bridge Co., 58 tons; T. J. Harvey & Son, Adams, Mass., general contractors.

Shape Awards Compared

	Tons
Week ended Nov. 4	14,809
Week ended Oct. 28	22,075
Week ended Oct. 21	6,333
This week in 1932	8,201
Weekly average, 1932	14,285
Weekly average, 1933	14,295
Weekly average, Oct.	14,719
Total to date, 1932	739,691
Total to date, 1933	643,269

120 tons, state bridge, Morris Plains, N. J., through William Eisenberg & Sons, Camden, N. J., general contractors, to McClintic-Marshall Corp., Bethlehem, Pa.

116 tons, bridge in Custer County, Idaho, for Bureau of Public Roads. To unnamed interest.

115 tons, grade separation, Interboro Parkway, Queens, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.; Nicholas Bonomo, general contractor.

115 tons, highway bridge, Clayton, N. Mex., to American Bridge Co., Pittsburgh.

115 tons, Colgate building, Jersey City, N. J., to Maxwell Spiro Co., Jersey City.

105 tons, four spans, St. Louis-San Francisco railroad, Springfield, Mo., to Stupp Bros. Bridge & Iron Co., St. Louis.

100 tons, ammunition building, Iona Island, N. Y., Belmont Iron Works, Philadelphia.

100 tons, bridges, Surry county, North Carolina, Knoxville Iron Co., Knoxville, Tenn., through Hobbs Peabody Construction Co., Charlotte, N. C.

100 tons, shapes and bars, overhead bridge over Seaboard railroad, route 74, Marion country, Florida, to Aetna Steel & Iron Works, Jacksonville, and Dudley Bar Co., Birmingham, Ala.; C. T. Felix, St. Petersburg, Fla., general contractor.

Unstated tonnage, shapes and bars, bridge and grading, Wilkes county, Georgia, to Virginia Bridge & Iron Co., Roanoke and Kalman Steel Corp., Bethlehem, Pa.; Nichols Construction Co., Atlanta, general contractor.

Contracts Pending

14,000 tons, New York Central grade crossing, Syracuse, N. Y.; bids Dec. 5.

4000 tons, federal building, San Francisco; bids Nov. 7. Original bids of February, 1933, rejected.

2000 tons, drum gates, Boulder dam, Boulder City, Nev., bids postponed until at least Nov. 6, and possibly later, from opening scheduled for Nov. 2.

1500 tons, additions, U. S. Narcotic Farm, Lexington, Ky.; Virginia Engineering Co. Inc., Newport News, Va., low on supplemental bids Oct. 30.

1500 tons, proposed addition to Seventh street viaduct, Kansas City, Mo.

1100 tons, river lock, Quincy, Ill.; bids to United States engineer, Rock Island, Ill., postponed to Nov. 14.

1000 tons, drum gates, Boulder Dam, Boulder City, Nev.; specification 548; bids Nov. 15.

850 tons, hangar, Coco Sola, Canal Zone; specification 7531; bids Nov. 22.

750 tons for Pennsylvania railroad grade elimination bridge at East Aurora, N. Y.

740 tons, group of several highway bridges, Minnesota.

550 tons, state highway bridge, Wrightstown, Wis.; bids Nov. 9.

460 tons, four New York state highway bridges.

460 tons, bridge, Los Angeles.

400 tons, sewage disposal plant, Fargo, N. Dak.

400 tons, tainter gates, New Orleans.

400 tons, bridge, Sagerton, Tex.

350 tons, class room building, Howard university, Washington; Nov. 30.

350 tons, tobacco warehouse, Baltimore.

MICHIGAN
COLD DRAWN SEAMLESS STEEL TUBING

Manufacturers of cold drawn seamless steel tubing in any form and to any carbon or alloy specification in sizes from 3" outside diameter down to 1/16" and in wall thickness from 5/8" to 26 gauge.

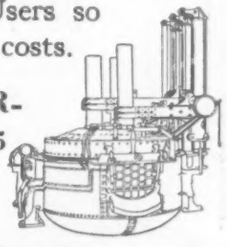
ROUNDS • SQUARES
HEXAGONS • SPECIAL SHAPES

MICHIGAN • • • •
SEAMLESS TUBE COMPANY
A Michigan Corporation
Mills and General Offices: South Lyon, Michigan
(Suburb of Detroit)
Sales Representatives:
Chicago . Cincinnati . Cleveland . Detroit . Indianapolis
Memphis . New York . St. Louis . Washington, D. C. . Los Angeles

Lectromelt

direct arc melting and refining furnaces for tool and alloy steel ingot production, for steel castings manufacture, ... and the making of plain steels as are used in the Lectromelt billet size ingot process for reinforcing bars . . . . have now been made even more rapid and economic by the new patent . . .

LIFT and SWING-ROOF, QUICK-TOP-CHARGE DESIGN. . . . This construction may be seen in use in the field . . . . Users so fitted have proved this feature lowers costs.



PITTSBURGH LECTROMELT FURNACE CORPORATION . . PO Box 1125
Pittsburgh, Pa., U. S. A.
and associate company

CANADIAN LECTROMELT FURNACES LTD. . . . . 4295 Richelieu St., Montreal, P. Q., Canada

SIZES - - - 50 Pounds to 50 Tons Capacity

350 tons, state bridge, Woolwich, Me.
330 tons, bridge, Stonewall county, Texas.
300 tons, hangar, Ft. Bragg, N. C., bids asked.
315 tons, five bridges, Alaska road commission, Seattle; pending.
295 tons, garage, Johns Hopkins hospital, Baltimore, early action expected.
280 tons, two Montana state highway bridges at Myles, Mont., and Drummond, Mont.
250 tons, state bridge. Belmont, N. Y.
250 tons for buildings and miscellaneous requirements easterly sewage disposal project, Cleveland.
250 tons, brewery, Joplin, Mo.
250 tons, Genesee river bridge, Avon, N. Y.
246 tons, bridge, Louisiana highway commission; bids Nov. 21.
212 tons, Pennsylvania state bridge, Lycoming county; bids Nov. 16.
200 tons, bridge, Henniker, N. H.
200 tons, bus terminal, Paterson, N. J.
200 tons, state highway bridge, Seymour, Conn.
200 tons, ward building, Gallinger hospital, Washington; bids in.
182 tons, Tongue river bridge, project NRM 135-G, Montana for state; bids opened.
180 tons, grade crossing Long Island railroad, Forest Hills, N. Y.
180 tons, bridge, Miles City, Mont.
180 tons, bridge, New Hampshire ave., N. W. Washington, over Baltimore & Ohio right-of-way, bids to be opened Nov. 17.
178 tons, Deschutes river bridge, Jefferson county, Oregon, for state; bids opened.
175 tons, post office, Lewiston, Me.: Nicholas Villani Construction Co., Staten Island, low limestone; Coath & Goss, Chicago, low, granite.
175 tons, bridge, Kenney, Ill.
170 tons, state highway bridge, Allenwood, Pa., pending.
160 tons, magazine building, Lake Denmark, N. J., bureau of ordnance, navy department.
150 tons, seaplane hangar, U. S. coast guard reservation, Biloxi, Miss.; bids Nov. 14 .
143 tons, state highway bridge, White Deer, Pa., general contract awarded.
116 tons, bridge, Louisiana highway commission; bids Nov. 21.
115 tons, state highway bridge, Annapolis, Md., bids asked.
112 tons, bridge, Louisiana highway commission; bids Nov. 21.
110 tons, Municipal bridge, Baltimore, bids asked.
100 tons, church, Rockville Center, N. Y.
100 tons, building, Manhattan College, New York.
100 tons, approximately, state highway bridge, Gladstone, New Jersey, pending.
100 tons, bridge, carrying route 10, section 4, across tracks of D. L. & W. railroad, Morris Plains, N. J.; bids Nov. 20, state highway commission, Trenton. Project takes 60 tons reinforcing bars.
100 tons, city hall and fire station, Ellsworth, Me.
35 tons, bridge over Tonawanda creek, Niagara and Erie counties, New York.

WOODEN TANKS
FOR
PICKLING PURPOSES
Every pickling and acid storage tank we produce is made to order. Only perfect timbers are used—tie rods, nuts and washers are made of acid resisting bronze or Monel metal.
We design and manufacture tanks lined with lead, rubber or protective wood.
Consult us regarding your tank problems.
THE HAUSER-STANDER TANK CO.
CINCINNATI, O U.S.A.
WE WIN WITH QUALITY

Reinforcing

Reinforcing Bar Prices, Page 57

Pittsburgh — Another Pennsylvania state highway letting closes Nov. 9 and closely follows up the first letting of the month, Nov. 2. Large tonnages of mesh will be required for these two paving projects which take over 200,000 square yards of concrete reinforced pavement. New York Central railroad is asking bids on a grade separation at Syracuse, N. Y., requiring 950 tons. Prices are quoted firmly on new business with new billet steel bars 1.90c, Pittsburgh, for cut lengths and rail steel 1.75c, Pittsburgh, for reinforcing purposes.

Chicago—Concrete bar orders are light, being restricted to a certain extent by delays in placing of orders for public works construction. Road work activity is declining seasonally although some orders are in prospect for bridge work. A government financed housing project for Chicago, involving a 420-room apartment building is expected to take a fair bar tonnage.

Boston—While demand for highway reinforcing steel has declined, several pending bridge projects will require substantial tonnages. The Saugus river bridge will take about 425 tons. Prices are firm with cut length billet steel bars 1.95c, Buffalo, and rail steel bars 1.80c, same point. Bids close Nov. 20 on foundations for three bridges over the Cape Cod Canal, a railroad span at Buzzards Bay, Mass., and two highway bridges, Bourne, Mass.

New York—Highway and bridge requirements still furnish the bulk of activity in reinforcing steel. New awards for mesh total close to 1000 tons. For Erie railroad bridges, Elmira, N. Y., 1300 tons, all bids to the contractor were the same and it is reported the tonnage will be divided.

Philadelphia — Outstanding new

Concrete Awards Compared

	Tons
Week ended Nov. 4	3,533
Week ended Oct. 28	3,885
Week ended Oct. 21	1,043
This week in 1932	2,388
Weekly average, 1932	3,920
Weekly average, 1933	3,557
Weekly average, Oct.	4,852
Total to date, 1932	190,247
Total to date, 1933	160,177

inquiry involves approximately 900 tons for a dry dock for the Philadelphia navy yard, bids on which will be opened Nov. 14. The Pennsylvania railroad is expected to award 350 tons shortly for work here, presumably in connection with its Thirtieth street development. Apart from this and 450 tons for a government aid housing development in this city on which bids were opened Nov. 4, demand is comprised largely of miscellaneous bridge work. As for producers' prices on new business, the market appears firm at 1.90c, Pittsburgh, for billet quality in cut lengths, or 2.19c, Philadelphia.

Contracts Placed

1300 tons, bridges and approaches, Erie railroad, Elmira, N. Y., divided, the bulk to Truscon Steel Co., Youngstown, O.

350 tons, mesh, highway, 8.49 miles, Stanwix - Oriskany - Whitesboro. Oneida county, New York, to Wickwire-Spencer Steel Co., Buffalo, N. Y.; J. F. Paddelford, Sherburne, N. Y., general contractor.

300 tons, mesh, highway, 7.38 miles, Castle Creek-Whitney Point-Lisle, Broome county, New York, to Kalman Steel Corp., Bethlehem, Pa.; W. G. M. Construction Co. Inc., New York, general contractor.

275 tons, reinforced concrete highway, Greenville-Nortonville road, Muhlenberg county, Kentucky, to Kalman Steel Corp., Bethlehem, Pa.; Ellis Kelly & Co., Owensboro, Ky., general contractor.

205 tons, highway work and bridges in four counties, Montana, for state; to unnamed interests.

203 tons, bridge over Meramec river, St. Louis county, Missouri, to Laclede Steel Co., St. Louis.

200 tons, for bulkhead, Buffalo breakwall, to Kalman Steel Co., Buffalo.

150 tons, highway, Oneida county, New York, opening Oct. 31, to American Steel & Wire Co., New York.

150 tons, bridges, Acadia and Jeff Davis parishes, Louisiana, to Sheffield Steel Corp., Kansas City, Mo.; Forcum James Co., Dyersburg, Tenn., general contractor. Jones & Laughlin Steel Corp. awarded 62 tons structural shapes.

100 tons, bridge, Morris Plains, N. J., through William Eisenberg & Sons, Camden, N. J., general contractors, to Kalman Steel Corp., Bethlehem, Pa.

100 tons, highway grade separation, Queens, N. Y., National Bridge Co., Long Island City, N. Y.; through George Gasparini.

100 tons, bridge, Middletown, N. Y., Joseph T. Ryerson & Son Inc., through Bronx Water Works Corp.

100 tons, highway grade crossing, Long Island, N. Y., Truscon Steel Co., Youngstown, O., through Johnson, Drake & Piper.

Contracts Pending

1647 tons, bridge, St. Charles Parish, La., state highway commission; bids Nov. 21.

1000 tons, (or more), substructures for two highway bridges, Cape Cod canal, Bourne, Mass.; bids Nov. 20.

950 tons, grade separation, Syracuse, N. Y., for the New York Central railroad; bids Dec. 5.

900 tons, dry dock, Philadelphia navy yard; bids Nov. 14.

425 tons, reservoir roof, Glendale, Calif.; bids opened.

348 tons, pavement, Louisiana highway commission; bids Nov. 14.

350 tons, two permanent barracks, Ft. Lewis, Wash.; McDonald Building Co., Tacoma, Wash., general contractor.

350 tons, construction for Pennsylvania railroad in Philadelphia; pending.

285 tons, chief of engineers, Washington, bids in Nov. 6.

250 to 400 tons, Facilities building, Pearl Harbor, T. H.; specification 7074; new bids Nov. 29.

198 tons, Soto street bridge, Los Angeles; bids opened.

183 tons, highway work, Santa Barbara county, California, for state; bids opened.

187 tons, reinforced concrete siphon, Little Moronga canyon, Metropolitan water district, Los Angeles; bids Oct. 30.

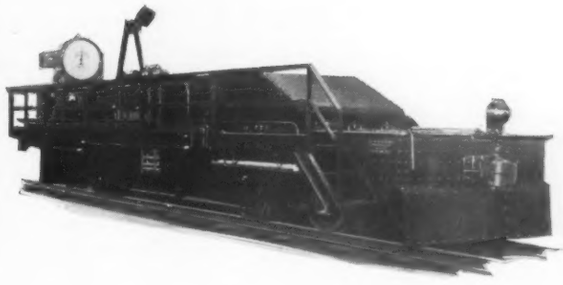
156 tons, irrigation work, Owyhee project, Ontario, Oreg.; bids opened.

150 tons, State hospital, Camarillo, Calif.; bids Nov. 14.

125 tons, superstructure, midtown post office annex, Manhattan (New York); also large volume floor mesh.

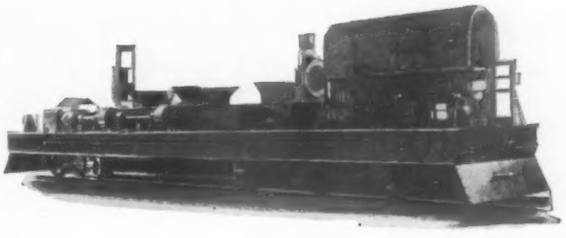
100 tons, mausoleum, Taft, Calif.; bids opened.

ATLAS SCALE CARS



Double Compartment Bottom Dump Scale Car. Scale of All Steel construction equipped with Atlas Indicating Dial and Recorder.

20 Ton Capacity Double Compartment Scale Car. Orr type Bin gates controlled from operator's station on scale car.



Other Atlas Products

Gas-Electric and Diesel-Electric Locomotives—Car Pushers—Storage Battery Locomotives—Electrically Operated Industrial Cars—Scale Cars and Weighing Cars of all kinds — Ore Transfer Cars and Blast Furnace Charging Cars.

Coke Oven Equipment

Pushers and Levelers—Coal Charging Cars—Door Handling Machines — Coke Quenching Cars.

Also Atlas Patented Indicating and Recording Mechanism for Weighing Scales.

THE ATLAS CAR & MFG. CO.

Engineers *Manufacturers*

CLEVELAND, OHIO

Pig Iron

Pig Iron Prices, Page 58

Pittsburgh—Buying is quiet and shipments are declining. Most foundries are not in the market. Occasional small sales develop bases of $18, Neville Island, on foundry grades, $18.50 on bessemer, and $17.50 on basic pig iron. If a price advance is to be made for the first quarter of next year, as is expected in some quarters, filing of the new quotations will be made before the end of the month.

Cleveland—Decline in shipments has continued into the first week of the month. Foundries serving the motor industry will have little work until new-model production begins. Some slight betterment among jobbing foundries is reported, but the tonnages involved are small. With forward buying prohibited under the code until after Dec. 1, activity during the remainder of the month promises to be limited.

Chicago—Shipments are steady but hardly indicative of foundry operations since considerable iron is being taken out because of code provisions and because prices prevailing on such tonnages are less than the current market. Foundry operations are moderately lower, particularly among companies serving the automotive industry. Little new business is in early prospect.

Boston—Sales are at low ebb with most consumers covered through this quarter. Sellers have not opened books for next quarter and an advance in price for that period is predicted freely. Except for a few foundries making castings for machine tools, foundry melt is barely holding to the recent rate. Prices are firm at $18, Everett, Mass., base, for No. 2 foundry iron.

New York—New business in pig iron is decidedly dull, with little immediate improvement in sight.

Philadelphia — Scattered carlot buying reflects not only the continued decline in steelmaking operations, but a further reduction in foundry melt. Conservative trade opinion is that an upward trend in consumption, with the outlook more encouraging than at the moment, must develop before higher prices are assured. Meanwhile, No. 2 foundry is $18.26, delivered, Philadelphia; malleable $18.76 and basic $17.76.

Bids close Nov. 14 on 154 tons of foundry iron for the navy department, 100 tons for Mare Island, Calif., and 54 tons for Brooklyn, N. Y.

Buffalo—No tonnage demand for pig iron is encountered. Melt has dropped considerably and most consumers are well covered. The fact that six furnaces continue in blast here indicates the market has a reasonably firm undertone. First quarter prices continue to be the principal subject of discussion. Several barges are scheduled to take iron to the seaboard this week; others may be dispatched later in the month.

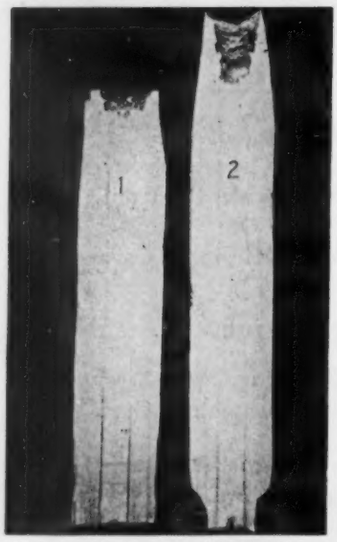
Cincinnati—Buying of pig iron is confined to spot shipments, chiefly to interests receiving increased business because of labor troubles elsewhere. Important melters are covered for the quarter. The market is $17.50, Hamilton furnace, for No. 2 foundry iron.

St. Louis—Shipments for October will show a slight reduction from the September total. Warm weather has proved beneficial to stove plants, which are carrying the burden of current melt. A quiet market for the balance of the year is anticipated.

Birmingham, Ala. — Indications point to improved buying, but spot business is discouraging. Base price is firm, with an advance in prospect for next quarter.

Toronto, Ont.—Merchant sales for the week were dull. The daily melt, while unchanged for the past few weeks, is expected to show improvement in the course of the next few weeks, following resumption of full-time operations by two foundries.

Let LIQUITOL Reduce YOUR INGOT COSTS



(1) Is treated with LIQUITOL A SPECIAL, the fluid metal is only poured to half of the head. The formation of the hole is such that the ingot is quitesolid. The savings in 16 of these ingots is 1 ingot. This is only used for refined steel, that is to say, tool steel, cutting steel, and special steels of high quality.

LIQUITOL retards Cooling of hot-top metal.

Working on the theory that secondary piping is caused by occluded gases, it follows that if the hot-top is kept open longer gases have a better chance to escape.

Liquid metal in the hot-top allows for proper feeding and reduction in hot-top volume up to 40%.

LIQUITOL is recommended in production of alloy steel, as it is guaranteed not to contaminate metal.

LIQUITOL prevents bridging of hot-top metal, allowing a natural feed of metal down the hot-top sides.

THE ALPHA-LUX COMPANY, INC.

192 Front Street

NEW YORK CITY

Philadelphia Chicago

Coke

Coke Prices, Page 58

On a Connellsville, Pa., oven basis, $3.75 on standard furnace coke, and unchanged prices on foundry grades, are being continued into November. Foundry coke is $4.25 per ton on common grades and $5.25 on spot and contract premium grades. Buying is quiet and most foundries are out of the market. A few sales at $3.75, ovens, on furnace coke have been made recently.

By-products foundry coke has been advanced 50 cents a ton at Chicago on November business to $8.50, ovens for outside delivery and $9.25, delivered Chicago. This is $1.50 a ton above the January level.

Scrap

Scrap Prices, Page 60

Pittsburgh — Some 27,500 tons of Pennsylvania railroad scrap, not all of which is being sold because of the railroad's stipulation that bidders must name delivery points immediately, provided a large distress tonnage when offered Nov. 1. Although railroad scrap such as this usually commands a premium, prices indicated the distress nature of the sale. The same is forecast for the 6000-ton Baltimore & Ohio list which closes Nov. 6. Consumer interest in scrap is entirely lacking and the market is weak. Unchanged prices, centering about No. 1 heavy melting steel at $12 to $12.50, is still entirely nominal. Offers of single carloads of low phos specialties have been made at $14 in this district.

Cleveland — Practically all the movement of iron and steel scrap in northern Ohio consists of carloads of blast furnace materials with a few cars of heavy melting and cast scrap. Quotations are weak but unchanged.

Chicago—Scrap market activity has declined further with steelmaking operations. Shipments to one mill have been suspended and others generally are out of the market. Heavy melting steel nominally is unchanged at $8.50 to $9, following small sales at the latter figure, while a number of other grades are quotably lower. Railroad offerings are light but pressure on the part of sellers to dispose of material has a depressing effect on price. The last boat load of scrap for this season has left Chicago for an eastern port.

Boston — Scrap continues dull, New England consumers taking little, although occasional barge shipments to eastern Pennsylvania of No. 1 steel and engine blocks are being made. Cast grades are at a standstill. Prices are easy but appear to be dragging bottom, some quotations being nominal with lack of demand.

New York—New and heavy orders for export have a steadying influence on heavy melting steel prices, domestic demand being light. Buying for Japan, Poland and Italy is active at most Atlantic seaboard and Gulf ports. Some of the barge buying in New England is being towed to New York for boat shipment.

Philadelphia — Approximately 2000 tons of No. 1 steel is being loaded here for export to Japan. This is the first export cargo here since March. The price is about on a parity with the $10, delivered, eastern Pennsylvania, price prevailing on domestic business. Trading otherwise is featureless, with shipments still being held up at certain leading consuming points. Prices generally are soft with No. 2 heavy melting steel down 50 cents a ton to $8 to $8.50, delivered, and cast wheels off approximately 75 cents a ton to $11.50 to $12.

Detroit—Although the market has further weakened and sentiment is heavy, price reductions have affected only two grades, new heavy auto cast declining 50 cents and forge flashings 25 cents. Forecasts of a resumption of business are further deferred, largely on account of the situation in Washington.

Buffalo—There is no interest in scrap. Offers are 25 cents to $1 under dealers' ideas of value and nothing is being done except occasional sales of small lots of distress scrap. Prices are nominal.

Cincinnati—Quotations on iron and steel scrap are depressed by continued absence of demand and bar-

BETTER PRODUCTS
BETTER FINISHES
AT LOW COST
Pre-Coated
STRIP STEELS
ThomaStrip
PRE-COATED WITH
ZINC OR COPPER
"Made from Thomastrip" gives highest quality authority to any product that can be stamped or drawn from strip steel. Superior drawing quality, uniformity of gauge and temper that eliminates product defects and cuts costs. Dense, non-porous coating of rust and corrosion resistant zinc that serves as a final finish, or rust preventative undercoat for paint and lacquer finishes. Or fine copper coating that serves as a finish coat for indoor use, or as the bond for other platings . . . It will pay you to investigate the many advantages of specialized production Thomastrip. Send for test samples — specify width, gauge, temper and coat desired.
The THOMAS STEEL CO.
WARREN • OHIO
SPECIALIZED PRODUCTION
COLD ROLLED STRIP STEEL

ren outlook as mill production declines.

Birmingham, Ala.—Steel and iron scrap is without prospects of early revival. A consumer of heavy melting steel is receiving a large quantity of old rails. Prices are unchanged.

Toronto, Ont.—Trading in iron and steel scrap is light.

How To Measure a Millionth

C. E. Johansson, of C. E. Johansson Inc., division of the Ford Motor Co., Detroit, was to discuss "Measuring a Millionth of an Inch" before the Pittsburgh section of the Society of Automotive Engineers, Nov. 6, at the Pittsburgh Athletic club. Dr. Frank Jordan, director of Allegheny observatory, will speak on the relation of accurate measurements to scientific research. Murray Fahnestock is chairman of the Pittsburgh section.

PROFITS
. . . DEPEND ON SALES

What is the sales outlook for the United States? By sections of the country? How do different cities compare? What are the industrial and agricultural possibilities?

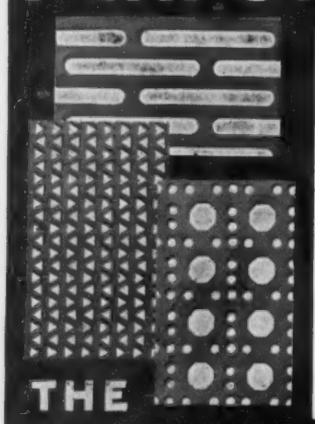
You will find our current Sales and Credit Map, in which the above questions are answered, of great aid in working out your sales and distribution problem.

We have a limited quantity of these Maps, a copy of which we will be glad to mail to interested executives.

Address Department S-53

The BROOKMIRE ECONOMIC SERVICE Inc.
551 Fifth Ave., New York City

PERFORATED METAL



FOR EVERY REQUIREMENT

including Architectural Grilles, Safety Guards and Screens of every sort in Steel, Brass, Bronze, Copper, Zinc, Tin Plate, Monel, Lead, Stainless Iron, etc.

Write for complete information

THE HARRINGTON & KING PERFORATING CO.
5634 FILLMORE STREET—CHICAGO, ILL.
New York Office, 114 Liberty Street

Pipe

Pipe Prices, Page 57

Pittsburgh—Although no demand has developed for line pipe, and seamless material is being specified sparingly, certain recent orders from heating contractors have been as good as any in the past several months. Some encouragement for railroad buying of boiler tubes is reported. Prices continue as of the card under date of July 1 with no immediate change in prospect.

Chicago — New orders for cast pipe are light but prospective work for sewage disposal plants and water main extensions aids the outlook. Delay still is encountered in starting work on federal aid projects with plans still awaited on many for which loans have been requested. Chicago is taking bids on 300 tons of special fittings in addition to 229 tons of 20-inch pipe. Among the larger projects pending in this district are a filtration plant at Hammond, Ind., and sewage system construction at Beaver Dam, Green Bay and Oshkosh, Wis., and Cedar Rapids, Iowa.

Boston—Following placing of two large cast pipe contracts, buying has been confined to small fill-in lots. General outlook is brighter, however, as financing is being completed for several projects taking large tonnages in New England. Merchant steel pipe buying is slack.

New York—Cast pipe is more active with bids being taken on two inquiries, Bayonne, N. J., and Latham, Colonie, N. Y., aggregating approximately 3200 tons. Gradual approval of federal loans for public work continues to bolster the outlook.

Cincinnati—Bids will be taken Nov. 8 on alternate specifications, either steel or cast iron pipe, for the Cincinnati waterworks. For one project 4000 feet of class C, 24-inch, 13,500 feet of class D, 24-inch; and 55 tons of fittings will be required. For another project 14,950 feet of 16-inch pipe and 27 tons of fittings will be required. Specifications are being prepared for later bids on a 36-inch feeder, 3.12 miles long.

Birmingham, Ala.—Despite a few awards, total business is far from expectations. Raw material stock is at low ebb.

Cast Pipe Placed

325 tons, Puget Sound navy yard, Washington, to United States Pipe & Foundry Co., Burlington, N. J.
100 tons, improvement at Fort Lewis,

Wash., to Universal Pipe Co., Birmingham, Ala.

Cast Pipe Pending

1800 tons, 42-inch, including small lot of wrought iron pipe, Bayonne, N. J.; bids Nov. 7.

300 tons, 30 to 48-inch water pipe fittings, Chicago; bids Nov. 10.

210 tons, 4, 6 and 8-inch, Clear Springs, Md.

200 tons, 6-inch, national parks, department of interior, Washington; bids in.

Unstated tonnage, 1968 feet, 8-inch bell and spigot, class B or 150, Denver; bids in.

Unstated tonnage, Cincinnati waterworks, 4000 feet, class C, 24-inch; 13,500 feet, class D, 24-inch; and 55 tons fittings. Also separate project, 14,950 feet, 16-inch, and 27 tons fittings. Alternate specifications on steel pipe; bids Nov. 8.

Steel Pipe Pending

Unstated tonnage, 1000 feet, 20-inch, pontoon pipe, United States engineer, Philadelphia; bids Nov. 7.

Warehouse

Warehouse Prices, Page 59

Pittsburgh — Demand for warehouse steel is poor and total shipments from stock in October were below September. All base prices are holding on the new schedule which has been in effect since Oct. 23, including cold-drawn steel at 3.20c, which has not changed since early August.

Cleveland — Effective Nov. 1 a leading steel warehouse here has put into effect the new quantity differentials prevailing in other centers. The differential of 15 cents on cold-finished flats over rounds, squares and hexagons is discontinued, all four being quoted at 3.25c. Quantity differentials on cold-finished steel are modified to conform to mill quotations; the 100 to 299-pound bracket will be dropped and an extra of 1.25c will be applied on all orders under 300 pounds.

Chicago—October was one of the three best months so far this year in sales and little changed from the September volume. Cold finished rounds, hexagons, squares and flats have been advanced $2 a ton to 3.35c. Other prices are unchanged.

Boston—Prices have been revised under the new pricing method, advances resulting on most products. Bars are now 2.90c, shapes 3.07c, and plates 3.08c, Boston warehouse district. Volume has declined but slightly from the October rate.

New York—Warehouse distribution of steel has held well. Prices are unchanged, with cutting extras for sheet shearing fully applied, also

STRIP STEEL
HOT and COLD ROLLED

in regular carbon Steel of any analysis including alloy steels

also
RUST RESISTING METALS
in
CHROME and CHROME NICKEL analyses

SUPERIOR STEEL CORPORATION

General Office
3122 Grant Building
Pittsburgh, Pa.

Works at
Carnegie, Penna.

SALES OFFICES

2002 Girard Trust Bldg.
Philadelphia, Pa.

1017 Fisher Bldg.
Detroit, Mich.

Steel Sales Corp.
129 South Jefferson St.
Chicago, Ill.

H. L. Brown,
2001 Carew Tower
Cincinnati, Ohio

One of 30,000 STAMPINGS
Produced by
CROSBY
Stamping Engineers

Since 1896 the Crosby plant has been devoted, exclusively, to designing and producing Sheet Metal Stampings. Avail yourself of this experience. Send us your next stamping problem and watch results.

THE CROSBY COMPANY
BUFFALO, N. Y.
Branch Offices:
New York, Philadelphia, Pittsburgh,
Cleveland, Detroit, Chicago.

mill extras for gage, length and width. Fender and boat stock is now quoted 3.75c, New York.

Philadelphia—Contrary to some expectations of a week ago, no change has yet been made in prices nor in quantity differentials. Trading is about on a parity with the October rate, which, in turn, was slightly under that for September, in the experience of most jobbers.

Detroit—Iron and steel warehouses Nov. 1 adopted the quantity plan, the same as in effect at other points. The price of large rivets has been adjusted to 3.50c. Warehouse business in Detroit in October was on a parity with September.

Cincinnati — Warehouses have adopted modified quantity differentials on hot-rolled products. Base prices remain unchanged. Demand is close to the October level.

St. Louis—St. Louis warehouses have placed in effect the new quantity differentials. Preliminary reports indicate a total October volume little changed from September but substantially larger than a year ago.

Wire

Wire Prices, Page 57

Chicago—Wire demand is lagging and movement of plain wire and wire products is slower. Automotive needs are light and are expected to continue so until December. Demand for wire products in agricultural districts has failed to develop as anticipated and shipments to distributors show no improvement. The market continues $2.15 for wire nails and 2.15c for plain wire.

Boston—Demand for wire is quiet in practically all departments. Prices are unchanged with plain wire 2.20c, and spring wire 3.20c, Worcester.

Pittsburgh — Over 2000 tons of mesh are considered active for Pennsylvania state highway lettings which closed in the latter part of October. Including four October lettings and two so far this month, Nov. 2 and Nov. 9, some 400,000 square yards of concrete pavement, reinforced with mesh, are pending. Purchases are being made through individual contractors. On merchant wire products, present prices continue with shipments through December at $2.10 per keg on nails, $55 per column on fence, and 2.10c on plain wire. Restricted automotive activity has severely affected spring wire shipments although the market still is 3.10c, Pittsburgh.

Semifinished Steel

Semifinished Prices, Page 58

Nonintegrated producers of tin plate have been quoted $26, Pittsburgh, on sheet bars since the adoption of the steel code, plus the full all-rail delivered rate. This contrasts with $25 and $26, delivered, which had prevailed previously. Since the adoption of the steel code, the sharpest advance in semifinished steel has been recorded in sheet bars. Billets and slabs continue quiet and unchanged at $26, Pittsburgh, and wire rods are in slack demand but hold at $35 base, Pittsburgh. Skelp is quoted at 1.60c. Under the operation of regulation 13 of the steel code, carbon billets and slabs deliver in Detroit for $29.

Bolts and Nuts

Bolt, Nut, Rivet Prices, Page 51

Contract buyers of bolts, nuts and rivets specified fully last week against October contracts and since Nov. 1 producers are applying the advanced prices. Shipments on lower-priced contracts, however, may be arranged until Nov. 15. The new price on bolts and nuts is 70 off list and the base on large rivets is 2.75c, Pittsburgh or Cleveland, 2.85c, Chicago. Small rivets are quoted at 70 and 10 off. Only small sales have been made under these new prices. Advances in cap and set screws are regarded as not unlikely, while there are prospects of higher levels for wrought washers. The latter generally are quoted 6.00 off.

The contract for 2000 tons of bolts, nuts and washers for the midtown Manhattan-Weehawken, N. J., tunnel under the Hudson river, closing Nov. 8 with the Port of New York authority, calls for 346,000 bolts and nuts and 692,000 washers, of high tensile steel.

Chesapeake & Ohio has awarded 400,000 screw spikes among Illinois Steel Co., Bethlehem Steel Co., Republic Steel Corp., and Lamson & Sessions Co.

Tin Plate

Tin Plate Prices, Page 56

Pittsburgh — The market on tin plate is still strong, producers are still able to schedule capacity operations and the only feature for early consideration is the 1934 contract base price. Filing of this price is expected before Nov. 20, effective Dec. 1. An advance from the present $4.25 contract base is generally conceded by producers and users. Costs of some tin plate manufacturers have risen 80 cents to $1 per base box over a year ago. Spot tin plate is quoted $4.65, Pittsburgh, with tin mill black sheets 2.50c and long ternes 2.90c, Pittsburgh, base.

PHILO BRAND
QUALITY SERVICE DEPENDABILITY
© O F A Corp 1931

Ferro Alloys

For Open Hearth — Electric and Foundry Practice

FERRO SILICON
50 — 75 — 85 — 90%

SILICO MANGANESE
ALL GRADES

FERRO CHROME
HIGH CARBON

FERRO MANGANESE

Ohio Ferro-Alloys Corporation
Canton, Ohio
Plant at Philo, Ohio

CHICAGO DETROIT

Pacific Coast

Pacific Coast Prices, Page 57, 58, 59

San Francisco—(*By Air Mail*)—Federal government, state and county work continues to lead, private projects being few. Awards were not heavy, the largest involving 289 tons of 14-gage black sheets for a 22-inch pipe line for Los Angeles, placed with an unnamed interest. Pending business aggregates over 8000 tons of reinforcing bars, 6000 tons of cast iron pipe, 4000 tons of plates and 14,000 tons of structural shapes. As far as can be ascertained, all producer are holding established prices.

Bids have been opened on 425 tons of reinforcing bars for a reservoir roof at Glendale, Calif., on 183 tons for highway work in Santa Barbara county, California, and on 198 tons for the Soto street bridge, Los Angeles. Close to 400 tons are involved in a facilities building at Pearl Harbor, T. H., up for bids Nov. 29. A mausoleum at Taft., Calif., will require 100 tons.

Plate demand is quiet. No award has been made on 3000 tons for a ship for Swayne & Hoyt, San Francisco.

Structural shape awards included only two lots of more than 100 tons. Unnamed interests took 161 tons for a crossing at Oil Junction, Calif. Bids open Nov. 15 for 1000 tons for eight drum gates for Boulder dam and Nov. 22 for 850 tons for a hangar at Coco Sola, C. Z. Bids have been opened on 425 tons for the Soto street bridge, Los Angeles. Plain structural shapes are firm at 2.25c, f.o.b. cars, Pacific Ports; wide flange are 2.35c.

Bookings of cast iron pipe were confined to lots of less than 100 tons. National Cast Iron Pipe Co. is low on 2758 tons of 6 to 24-inch pipe for Los Angeles. Long Beach, Calif., will open bids next week on close to 2200 tons of 24 and 20-inch pipe.

Northwest Trade Better

Seattle—Prospects of the iron and steel trade in the Pacific Northwest continue to improve as long-proposed projects begin to assume definite shape. The week's awards were above the average and several large jobs are up for bids soon. The first large private enterprise developed here in months is that of Albers Bros. Milling Co., Seattle, which plans construction of 20 concrete grain storage bins, capacity 500,000 bushels, to cost $250,000. Plans are under preparation by John S. Metcalf Ltd., Vancouver, B. C., engineer.

Northland Transportation Co., Seattle, has been granted a federal loan of $300,000 for construction of a steel motorship and work will begin where it stopped two months ago after contracts were awarded. This job involves 825 tons of plates and shapes. Lake Union Drydock & Machinery Co., Seattle, is low for construction of three coast guard patrol boats requiring 450 tons of plates and shapes. Each unit will be equipped with 1200-horsepower Winton diesel engines.

General contract bids for the Coulee dam project are expected to be opened about May 15. Meantime, preliminary work to cost $5,000,000 will be done, including a $650,000 steel span and $750,000 for railroad extension.

McClintic-Marshall Corp., Bethlehem, Pa., has the subcontract for furnishing 3600 tons of shapes for the Puget Sound navy yard machine shop. Work will begin in February. Minneapolis-Moline Implement Co., Minneapolis, is reported to have the contract for 567 tons of shapes for a bridge in Custer county, Mont. Union Iron Works, Spokane, will furnish 50 tons of shapes for sidewalks for a state bridge near Kennewick, Wash.

Puget Sound Machinery Depot, Seattle, bidding $28,913 for coal tar covering, has the contract for 150 tons of plates for a 24 and 36-inch water pipe for Fifth avenue S. W., Seattle. Manson Construction Co., Seattle, has the contract to erect two steel towers for the lighthouse department on the Canadian boundary.

Merchant bars are in better demand than reinforcing, the latter moving in car lots, but the aggregate is improving. McDonald Building Co., Tacoma, Wash., is low bidder at $347,527 for two permanent barracks at Ft. Lewis, Wash., involving 350 tons of concrete bars. Local mills are bidding on 2400 tons for the pier at Pearl Harbor, T. H., bids Nov. 15. Universal Pipe Co., Birmingham, Ala., has the subcontract for 100 tons of water mains for Ft. Lewis, Wash. Tacoma, Wash., will receive new tenders Nov. 1 for a tonnage of 16-inch cast iron pipe, previous bids rejected.

Wholesale jobbing trade is slow and sales are in small lots. Some fair tonages are pending but little improvement is expected until early 1934. In the meantime prices are well stabilized. The scrap market is unchanged, although there is a good demand for scrap rail for which agents of Oriental buyers are offering $8 to $8.50. Steel and cast iron scrap are inactive.

Steel in Europe

Foreign Steel Prices, Page 59

London — (*By Cable*)—Conditions generally continue improvement and the industry is confident in its outlook. Middlesbrough pig iron producers hesitate over taking forward business, hopeful of higher prices. Export inquiries are being received but placements are small. Steel bil-

1
Pres.— That's bad. Guess I better let you get back to Ryerson. They may not be so near —but they do have complete stocks and ship at once.
Purch. Agent—Can't I use .025 instead? No! Will delivery be O. K. next Tuesday? No! X X XX+X @.....
RYERSON STEEL - SERVICE
(Continued on next page)

lets have been sold into first quarter.

Constructional demand and orders are increasing. In the Midlands the market is stronger, rerollers are busier and light foundries are well occupied. The Scottish trade is moving quietly. Bookings of tin plate are substantial.

The Continent reports trade is hampered by fluctuations in exchange. France and Belgium are competing in the light sheet market. China is buying bars and sheets.

Metals

Nonferrous Metal Prices, Page 57, 60

New York—Uncertainty ruled in the nonferrous metals during the past week. Although the government pushed its gold buying policy further by entering the foreign market for the metal and advanced the price to $32.57 an ounce Friday in an effort to drive down the value of the dollar and raise commodity prices and stimulate business activity, this was not reflected to any extent in the metals. Tin was the only exception of major importance since the price on this metal is sensitive to fluctuations in the pound sterling rate. Copper and zinc actually declined and lead buying was in small volume.

Copper—Revelation of quiet price cutting brought the custom smelter price on electrolytic metal down to 8.00c, Connecticut Wednesday. Lake copper producers later lowered their quotations but the large mine producers continued to quote electrolytic at the entirely nominal figure of 9.00c, Connecticut. Copper could be had for shipment into first quarter of 1934 at the 8-cent level. Little buying was in evidence. Brass ingot prices were cut ¼-cent. Copper and brass scrap shipments to domestic refiners lagged but exporters again were able to move some material abroad.

Lead—Following substantial buying in the preceding week, sales fell off to mere carlots. Battery makers were the chief buyers with corroders probably second in importance. Sales for October delivery total about 30,000, against September shipments of 26,700 tons. November buying already is about equal to the September tonnage. A little metal also has been booked for December shipment.

Zinc—First-hand sellers reduced their quotations from $1 to $2 a ton at midweek following a period of extremely quiet demand. The easiness in the market came in face of steady ore prices and further curtailment of output. A little metal has been sold for shipment into January but most business has been for the current quarter.

Tin—Spot Straits metal reached approximately the 50-cent mark for the first time since early in 1929. The market uptrend reflected somewhat higher prices in the London market and especially a drop in the value of the dollar in terms of sterling. A further drop in visible supplies also had a strengthening effect. Tin production quotas will be increased Jan. 1, 1934 but consumption is expected to still top output.

Antimony—Prices were easy but a test generally was lacking.

Aluminum—Secondary metal was slightly easier. Virgin remained unchanged.

2
Purch. Agent—Oh, nothing—Just the job, I guess. If companies wouldn't bluff and take orders for material they don't have—
Wife—Why! What's the matter, Dear, you look so tired.
RYERSON STEEL - SERVICE
(Continued on next page)

Coke By-Products

Coke By-Product Prices, Page 58

New York—Consuming demand for distillates has dropped slightly, but the spread between production and demand continues narrow with prices firm. An exception to the trend is benzol, in slightly better demand. Lacquer-makers, however, are taking less toluol. Some inquiry with a view to covering on early 1934 requirements has brought little response from distributors, unwilling to contract so far in advance with a number of uncertain factors prevailing. Some contracting has been done on naphthalene at recently advanced prices. Phenol buying holds up well.

Quicksilver

New York—Quicksilver prices are unchanged in a quiet market, round lots being quoted $66 to $67 a virgin flask of 76 pounds and small lots 50 cents higher. Trade estimates place imports of foreign quicksilver during October between 2600 and 2700 flasks.

Cold Finished

Cold Finished Prices, Page 57

Pittsburgh—Price of cold-finished carbon steel bars is firm at 1.95c, Pittsburgh. Lack of new buying continues, shipments are declining and consumer inventories are still high. Cold-drawn alloy steel bars remain 2.95c base, Pittsburgh, plus alloy differentials. Turned and ground shafting is likewise quoted unchanged on a Pittsburgh base. Inasmuch as most cold bar drawers have full fourth-quarter protection on hot-rolled bars at prices below 1.75c, Pittsburgh, it is not likely an advance in cold-drawn will be made until possibly the first quarter of 1934.

A. J. Possolt, Poncha Springs, Colo., is reported to have discovered a new deposit of fluorspar near Salida, Colo.

Men of Industry

(*Concluded from Page* 21)

O., is no longer identified with the company.

□ □ □

Reeve C. Burt has been elected president, Burt Foundry Co., Toledo, O., succeeding his father, James C. Burt, who died Sept. 26.

□ □ □

Richard J. Stockham, secretary, Stockham Pipe & Fittings Co., Birmingham, Ala., has been elected president of the local junior chamber of commerce.

Ferroalloys

Ferroalloy Prices, Page 58

Shipments of ferromanganese and other ferroalloys against fourth quarter contracts still show a declining tendency. In fact, several important steel mills have suspended shipments on ferromanganese recently. The market is holding at $82, seaboard, for ferromanganese in carload lots. Domestic spiegeleisen continues $27, furnace.

Iron Ore

Iron Ore Prices, Page 58

Cleveland—Shipments of iron ore from upper lake ports in October totaled 4,542,510 tons, an increase of 3,615,949 tons over the total for October, 1932 and a decline of about a million tons from the 5,504,175 figure for September, 1933. Shipments for the season up to Nov. 1 totaled 20,842,083 tons compared with 3,317,716 tons in the same period last year.

Codes

(*Continued from Page* 16)

would be no objection to a separate code for manufacturers of cap and set screws, machine screws, machine screw nuts and wood screws, anticipating requests for separate codes filed by representatives of the Fabricated Metal Products Federation, the National Association of Farm Equipment Manufacturers and the Machinery and Allied Products institute.

Clarence Carlin, of the Anthony Carlin Co., Cleveland, proposed that the code be administered by a commissioner to be appointed by the President and to be without any financial interest in the industry. Labor, as usual, objected to the proposed hours and wage rates in differentials set up for female labor.

¶Eight more codes of fair competition were signed by the President, Oct. 31, including the road machinery manufacturing and the packaging machinery industries.

¶Hearing of the gray iron foundry industry code before Deputy Administrator H. O. King, Nov. 9, will be followed by a hearing on the foundry equipment industry code before Division Administrator Muir, Nov. 10.

¶Institute of Scrap Iron and Steel Inc., New York, has adopted a resolution protesting delay in action on the code for the scrap industry, contending that with scrap prices declining and operating costs in yards mounting, dealers not operating under the blue eagle retain unfair advantages over those who are working under NRA.

¶Further appointment of industrial advisers: R. S. Hall, of Republic Steel Corp., Cleveland, for the bolt, nut and rivet industry; and C. J. Ramsburg, vice president of the Koppers Co., Pittsburgh, and John V. W. Reynders, New York, for the structural steel and iron fabricating industry.

¶Nonferrous Foundry Association for Industrial Recovery Oct. 27 offered a basic code for the branch of the foundry industry it represents, supplemented by four group codes mainly devoted to fair practice provisions to govern the sand casting, aluminum permanent mold, steel and rolling mills, and blast furnace castings divisions.

Sam Tour, executive secretary, estimated the scope of the industry at an invested capital of $24,000,000, employing 9300 men, with a capacity of 36,000,000 pounds per month.

¶A proposed code for the machine tool and equipment distributing trade was heard Oct. 27, the code providing a 40 hour week and a minimum wage of $15 a week, except for learners. E. R. Motch of the Motch & Merryweather Machinery Co., Cleveland, is chairman of the code committee. A brief by the American Federation of Labor proposed a revision of hours and wages.

¶Representatives of the all-metal insect screen industry, supporting their code which sets up a 40 hour work week and a 40 cent per hour minimum for unskilled labor, maintained that proposed minimum wages would increase the industry's payroll 12½ per cent.

Production

ALL improvement in steel production since the third week of April has been sacrificed, with the industry's rate settling to 25 per cent for the week ended Nov. 4. This was a decline of 5 points from the week previous. The American Iron and Steel institute forecast for last week was 26.1 per cent.

¶Youngstown steel mills sagged 6 points last week to 32 per cent.

¶Pittsburgh steelmaking operations declined 4 points to 25 per cent last week and this week the rate may go as low as 23 per cent. Open-hearth department of one leading mill remains entirely closed. Others are all on greatly curtailed schedules with the exception of a leading independent, which is operating somewhat better than the average.

Four more blast furnaces were banked last week. Carnegie Steel Co.

3
Wife—Come, Jim, Dear—Corn muffins. !!!!
Purch. Agent—That's swell, Darling. Everything will be fine—till tomorrow.
RYERSON STEEL - SERVICE
(Continued on next page)

banked one of its Carrie stacks and two of its Edgar Thomson furnaces.

¶Chicago steel mills reduced operations sharply again last week, cutting ingot production 5 points to 31 per cent and banking another blast furnace.

¶Buffalo district mills eased off 3 points last week to 21 per cent, a rate probably retained this week. Eight open hearths are on.

¶Central eastern seaboard district steelmaking operations dropped 1½ points last week to 19 per cent. A further reduction this week is indicated.

¶New England operated at 80 per cent last week, unchanged.

¶Cleveland steel production was unchanged last week at 36 per cent.

Form National Galvanizers' Association, Submit Code

National Galvanizers' association, a trade association covering the galvanizing field, has been formed recently, embracing membership of approximately 100 concerns. Stuart Swensson, 603 American Bank building, Pittsburgh, is secretary of the association. An NRA code governing the galvanizers' industry is awaiting President Roosevelt's approval.

T. M. Gregory, president, Hanlon Gregory Galvanizing Co., Pittsburgh, is president of the association; G. H. Koven, L. O. Koven & Bros., Jersey City, N. J., is vice president; and F. C. Brightly, Standard Galvanizing Co., Chicago, treasurer.

Executive committee is composed of J. P. Cattie, Joseph P. Cattie & Bros., Philadelphia; F. A. Olmstead, Chain Products Co., Cleveland; Albert Ross, Ross Galvanizing Co., Brooklyn, N. Y.; and F. C. Rogers, Rogers Galvanizing Co., Blue Island, Ill.

Equipment

New York—Machinery dealers generally report an improvement in sales in October over the previous month, a 30 per cent gain being registered by one large dealer in this territory. This heavier volume did not include government inquiry or buying which is active. Acceptance of codes for both builders and dealers is expected to clear up several uncertain factors. Both codes include specific and ironclad provisions as to published prices, dealers' discounts, cost data and other rulings aimed at price cutting. W. E. Shipley Machinery Co., Philadelphia, is low on three milling machines for Washington, navy department, and much interest is being shown in the award for six radial drills for Norfolk, Va., Portsmouth, N. H. and Brooklyn, on which bids are in. Inquiry for navy requirements continues to pile up with bids already in on much of the equipment.

Boston—Low bidders on tools for the navy department, New England delivery, include Austin-Nichols Co., Cambridge, Mass., bending brake for Boston; Davenport Machine Tool Co., Rochester, N. Y., automatic screw machine for Portsmouth, N. H.; James Motley & Co., New York, bolt and rivet machine for Boston; Victor R. Browning & Co., Cleveland, six electric hoists for Portsmouth, N. H. (awarded); Austin-Hastings Co., Cambridge, forming press and dies for Portsmouth; Bertsch & Co., Cambridge City, Ind., plate straightening roll for Boston. While builders and dealers are figuring a large volume of navy equipment, the October improvement in volume noted by most builders in this territory is also due to better general industrial demand.

Cleveland—Placing of tool and die work normally done in Detroit plants in outside cities because of labor difficulties in the motor city has been a boon to sellers of machinery and equipment, since these outside shops in many cases are under-equipped for the work. A Salem, O., plant is operating night and day on this work, with many ex-Detroit workmen on the force. October sales totals in most cases showed a good gain over September, but outlook for the balance of the year is murky. An electrical manufacturer is inquiring for about ten large presses for one of its Ohio plants. Dealers are inclined to be apprehensive over the effect higher prices would have on equipment sales. Sidney Machine Tool Co., Sidney, O., is low on 25 engine lathes and spares for the navy department, for installation at Mare Island, Calif.

Pittsburgh — The market for steel mill equipment has reverted to the quiet of early last winter. Openhearth schedules are being cut down rapidly in this district, and with a lack of new steel business at hand mills are far removed from considering important equipment changes. One equipment firm is about to close on two important orders from outside this district for bar straighteners. An otherwise declining demand for ingot molds was arrested last week when a West Virginia mill released mold orders which had hitherto been held up.

Chicago—A fairly large volume of inquiries for machine tools and other plant equipment in a measure offsets continued quietness in new business. October sales generally showed a decrease from those of September, although business still is more active than a year ago. Expectations of better business in railroad equipment offer only slight hope for heavier demand for machine tools and other equipment for railroad car shops.

4
Wife—But, Jimmy—about this "Whose got it" business, I was reading an ad in your magazine—
Wife—That's the name—Ryerson—and no more worries. And now, my Jimmy, you will take me—
Purch. Agent—Don't worry your pretty head about it, Sweetheart. The chief agreed yesterday on changing to Ryerson. We can depend on them.
RYERSON STEEL - SERVICE
JOSEPH T. RYERSON & SON INC.

Construction and Enterprise

New England

BRIDGEPORT, CONN.—E. W. Carpenter Mfg. Co., manufacturer of metal specialties, is building a 1-story addition 40 x 100 feet.

PROVIDENCE, R. I.—Hoffman Hook Fastening Specialties Inc. has been incorporated to manufacture fastenings with 100 shares no par value, by C. Herbert Hoffman and R. Kornvein, Providence, R. I.

New York

JAMESTOWN, N. Y. — Daystrom Corp., manufacturer of metal specialties will build an addition to meet growing demand for its stampings, plating, polishing and grinding.

LONG ISLAND CITY, N. Y.—American Bent Steel Co., recently incorporated, has leased a plant at Thirty-seventh street, near Forty-third avenue, Long Island City, N. Y., for five years, from the Gilford Mfg. Co., Buffalo. (Incorporation noted Oct. 23.)

MASPETH, N. Y.—Garry Boroden, 6119 Metropolitan avenue, plans a 1-story blacksmith shop 50 x 97 feet on Metropolitan avenue near Sixty-second street. Plans are by C. Stedolph, Elmhurst, N. Y.

NEW YORK—Empco Metal Products Inc. has been incorporated with $20,000 capital to manufacture metal products, by Morris Beegel, 8 West Fortieth street, New York.

New Jersey

BAYWAY, N. J.—Phelps Dodge Copper Products Corp., 80 Front street, will build additions to cost $500,000, including a 1-story structure 130 x 395 feet for copper processing; also wing 40 x 158 feet equipped with three traveling cranes.

DOVER, N. J.—American Weldery will build a welding shop to cost about $28,000.

PATERSON, N. J.—Henry Timm Inc. has been incorporated with $58,000 capital to manufacture wire products.

Pennsylvania

CATASAUQUA, PA. — Catasauqua Iron Works, idle for three years, is being reconditioned for production of ring segments for a New York tunnel. Fifty men are engaged in rehabilitation preparatory to employment of a larger number at molding.

FERNDALE, PA.—Penn Machine Co. plans to build a foundry.

GREENSBURG, PA.—Machine shop of the Humphrey Coal & Coke Co. near Pleasant Unity, Pa., was destroyed by fire Oct. 26.

PITTSBURGH — Dravo Contracting Co., Pittsburgh, has been awarded construction of twin locks in the Ohio river at Hogsett, W. Va., at $3,145,791.

Ohio

ALLIANCE, O.—City will vote on a municipal electric light and power plant to cost about $700,000.

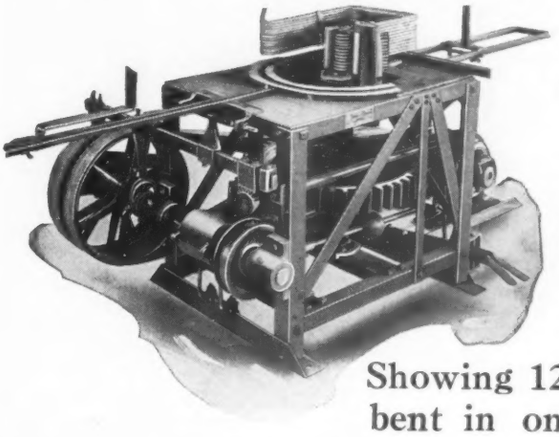
CLEVELAND—City has applied for federal aid for a reinforced concrete bridge on Broadway at the Wheeling & Lake Erie tracks, to cost $1,059,200. J. M. Heffelfinger, city hall, is engineer.

CLEVELAND—Stahl Gear & Machine Co., G. F. Stahl president and general manager, 1390 East Fortieth street, plans construction of a 1-story plant 120 x 160 feet, costing $50,000, at 3802 Perkins avenue, in 1934.

Michigan

DETROIT—Detroit Automotive Development Co., 1500 Penobscot building, has been incorporated with $1000 capital to build internal combustion motors, by Ralph H. Rosenberg, 416 Cadieux

The Kardong Stirrup Bender



This bender is the result of our 20 years experience in the manufacture of reinforcing steel benders. One man can easily turn out four-bend stirrups from ¾" stock at the rate of 300 or more per hour thus keeping labor costs at a minimum. A Handy bender for small slab bars and miscellaneous bending.

Ask for catalogue of our complete line of reinforcing steel Benders.

Showing 12 3/8" stirrups bent in one operation

Kardong Brothers, Inc.

Minneapolis, Minn.

BRONZE
BRASS
ALUMINUM
Castings

ALSO
MILL BEARINGS
BUSHINGS
ANTI-ACID METAL
HYDRAULIC PUMP WORK
PICKLE CRATES

You'll Like our Quality, Workmanship and Price

Send us your inquiries

THE SHOOP BRONZE COMPANY
344-354 West Sixth Avenue Bell Phone 371
TARENTUM, PA. (PITTSBURGH DISTRICT)

road, Grosse Point Village, Mich.

DETROIT—H. M. Sternfels, engineer, Detroit, is drawing plans for a distillery to be erected at Northville, Mich., for Irish Hills Distillery Inc., Walter Schweikert, Detroit, president. C. Howard Crane, Detroit, is associate architect

DETROIT—Detroit Electric Vehicle Mfg. Co., 1601 West Lafayette boulevard, has been incorporated with $2500 capital to manufacture automobiles, by Alfred F. Renz, 1601 West Lafayette boulevard, Detroit.

DETROIT—Weldex Inc., 9666 East Jefferson avenue, has been incorporated with $50,000 capital to manufacture electric welding machines, by William R. Althans, 2046 Penobscot building, Detroit.

DOWAGIAC, MICH. — Norris-Ayers, engineers, Ann Arbor, have been retained to prepare plans for construction of a light and power plant costing $200,000 at Dowagiac, Mich.

RIVER ROUGE, MICH.—City has applied to state administrative board for NRA aid for waterworks improvements including nine 700 to 4800 gallons per minute centrifugal pumps. Entire project totals about $380,000.

Illinois

CHICAGO—Oscar E. Hewitt, commissioner of public works, room 406 city hall, will receive bids until Nov. 10 for furnishing 300 tons of 30 to 48-inch standard special castings for water pipe.

CHICAGO—Illinois Barge Line Co., 1035 West Adams street, room 2100, has been incorporated with 1500 shares capital stock to operate a barge line, by McKinley, Linde & Grear, 105 West Adams street, Chicago.

CHICAGO — Barton Mfg. Co., 201 North Wells street, has been incorporated with 1000 shares capital stock to manufacture metal products, by Campbell, Clitheroe & Fischer, One LaSalle street building, Chicago.

CHICAGO—Bank Vault Equipment Co., 1750 Builders building, has been incorporated with 50 shares capital stock, to deal in steel vaults and furniture, by S. Yale Fischman, 100 North LaSalle street, Chicago.

CHICAGO — Eureka X-Ray Tube Corp., 609 West Lake street, has been incorporated with 200 shares capital stock to manufacture X-ray tubes, electrodes and other vacuum products, by Hopkins, Starr & Godman, 1300 Westminster building, 110 North Dearborn street, Chicago.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids Nov. 10 on specification 1026, for six chain hoists for delivery at San Diego, Calif.; specification 1040, for one motor-driven straight-sided double-crank press for Brooklyn, N. Y.; specification 1042, one motor-driven grinding machine for Brooklyn, N. Y.; specification 1012, one motor-driven shaper for delivery at Homestead, Pa.; Nov. 14, specification 1013, one motor-driven deep gap punch press for Puget Sound, Wash.; specification 1020, one motor-driven pipe threading and cutting machine, for Mare Island, Calif.; specification 1031, one motor-driven radial drill for delivery at San Pedro, Calif.; Nov. 21, specification 1011, ten pneumatic grinders for Mare Island, Calif.

BUFFALO SPRINGS, KY.—Buffalo Springs Distillery Co. plans construction of a new warehouse and will install complete equipment for manufacturing 30 barrels per day of spirits. Cost estimated at $150,000. Walter C. Wagner, Breslin building, Louisville, Ky., is architect and engineer.

ELLISVILLE, MISS.—Ellisville Ice Co. plans construction of an electric power plant to cost $70,000.

Texas

LIBERTY, TEX.—Tex-La Tool Co. is building a welding shop addition 35 x 70 feet to its shop here. Acetylene and electric equipment is being bought. L. I. Pevetoe is president and manager.

TOMBALL, TEX.—Texas Iron Works, Houston, Tex., has established a machine shop here in charge of T. C. McNight, shop superintendent, for the repair of oilfield tools.

DALLAS, TEX.—Joor Tank Corp. has been incorporated with $4000 capital to manufacture steel products, by W. E. Joor Jr. and associates.

Wisconsin

EAU CLAIRE, WIS.—National Pressure Cooker Co., 1515 Ball street, will build a 1-story factory building 22 x 110 feet, to cost about $40,000. C. Volkman, McGrath building, Eau Claire, Wis., is architect.

MILWAUKEE—South Side Malleable Casting Co., 2700 South Nineteenth street, has let contract to Klug & Smith, Milwaukee, for repair of its burned plant, to cost about $28,000.

Minnesota

HANCOCK, MINN.—City has voted $40,000 for a municipal electric light and power plant. H. F. Frisbee, Hancock, Minn., is engineer.

Iowa

OTTUMWA, IOWA—Lowe Foundry Co., B. H. Lowe and L. L. Davolt, owners, has been established at 515 West Main street to do brass, aluminum and other casting work and stove plate.

Nevada

BOULDER CITY, NEV.—Bureau of reclamation, department of interior, Washington, will take bids Nov. 15 for eight 16 x 100-foot drum gates and control mechanisms for spillways at Boulder dam.

Pacific Coast

BENECIA, CALIF.—Benecia Brewing Co., 333 Kearny street, San Francisco, plans remodeling a plant for use as a brewery, to cost about $75,000.

KEYSTONE, CALIF.—E. D. Marr heads a new company as yet not named, which will build an oil refinery to cost $250,000. A site of ten acres has been bought at Avalon boulevard and 223rd street, between Los Angeles and Long Beach. Mr. Marr is former president of the Marine Oil Corp., which operates in the Signal Hill field.

SAN JOSE, CALIF.—Continental Can Co., San Francisco, manufacturer of packages and containers, is having plans made for a $200,000 factory building at Eighth and Taylor streets, San Jose, Calif.

TURLOCK, CALIF.—Norwall and K. Knutsen have formed a packing company and will build a $75,000 dehydrating and packing plant here.

REEDSPORT, OREG.—Water system is being planned by city officials and federal loan will be sought to finance it. C. C. Rockley is engineer.

ALMIRA, WASH.—City council will order special election on bond issue of $15,000 for a municipal water system costing about $25,000, including 80,000-gallon steel tank. Otto Wiley is engineer.

SEATTLE—American Foundry Co. has been incorporated with $50,000 capital, by Sumner K. Prescott, J. P. Hansen and E. S. Johnson.

SEATTLE—Alaska Sunset Mines Inc., W. A. Castleton, general manager, Insurance building, is assembling dredge material and mining machinery and equipment here for shipment to Alaska.

SEATTLE—Gilman Brewing & Distilling Co., Liggett building, recently incorporated, has bought a 3-story building at 2501 Elliott avenue, which it will remodel. Equipment will be installed. The project will cost about $100,000 and capacity of 300 barrels per day is planned. (Noted Oct. 16.)

SPOKANE — Molybdenum Products Co. has been incorporated with $50,000 capital, by Z. T. Parker and associates. Wakefield & Witherspoon, Peyton building, are attorneys.

Dominion of Canada

MITCHELL, CNT.—Wetlaufer Machine Co., recently organized, has taken over the Mulherod foundry and will start operations soon.

SMITH'S FALLS, ONT.—Beaver Piston Ring Co. is moving its plant from here to Gananoque, Que.

SYDNEY, N. S.—James McDonald, city clerk, will ask bids soon on an electric power plant at the pumping station, including two diesel engines, costing about $25,000.

STATISTICS OF IRON AND STEEL INDUSTRY

Compiled by department of commerce, except: Unfilled tonnage by United States Steel Corp.; foundry equipment orders by Foundry Equipment Manufacturers association; river traffic by United States engineer at Pittsburgh; electric power by department of interior, geological survey

Automobiles

Units Production

1932	—United States— Total*	Passenger cars	Canada Total
Jan.	119,344	98,706	3,731
Feb.	117,413	94,085	5,477
Mar.	118,959	99,325	8,318
April	148,326	120,906	6,810
May	184,295	151,683	8,221
June	183,106	160,103	7,112
July	109,143	94,678	7,472
Aug.	90,325	75,898	4,067
Sept.	84,150	64,735	2,342
Oct.	48,702	35,102	2,923
Nov.	59,557	47,293	2,204
Dec.	107,353	85,858	2,139
Year	1,370,678	1,134,372	60,816
1933			
Jan.	130,044	108,321	3,358
Feb.	106,825	91,340	3,298
March	117,949	99,225	6,632
April	180,667	152,939	8,255
May	218,303	184,578	9,396
June	253,322	211,448	7,323
July	233,088	195,019	6,540
August	236,487	195,076	6,079
Sept.	196,082	160,891	5,808
9 Mo.	1,672,767	1,389,903	56,689

*Difference of total and passenger cars equals number of trucks. †Average monthly shipments, 1922-23-24 taken as 100.

Fabricated Shapes‡

Net Tons

1932	Bookings Tonnage	Per cent of capacity	Shipments Tonnage	Per cent of capacity
Jan.	48,400	12.1	65,600	16.4
Feb.	62,000	15.5	78,000	19.5
Mar.	64,400	16.1	82,400	20.6
April	64,800	16.2	68,400	17.1
May	90,800	22.7	72,400	18.1
June	86,800	21.7	83,200	20.8
July	69,200	17.3	83,600	20.9
Aug.	78,800	19.7	85, 00	21.4
Sept.	111,200	27.8	90,800	22.7
Oct.	74,400	18.6	86,400	21.6
Nov.	51,600	12.9	76,000	19.0
Dec.	145,600	36.4	68,800	17.2
Year	948,000	19.8	942,400	19.6
1933				
Jan.	73,679	....	50,965	....
Feb.	50,955	....	46,168	....
March	71,398	....	54,948	....
April	46,095	....	50,387	....
May	42,600	....	63,968	....
June	81,910	....	64,809	....
July	56,482	....	51,303	....
August	78,379	....	67,913	....
Sept.	57,642	....	64,362	....
9 Mo.	559,140	....	514,823	....

‡Figures by American Institute of Steel Construction, from January, 1933, 75 to 85 per cent of industry reporting.

Fabricated Plates

Net Tons Bookings

1932	Total	Oil Storage Tanks	Miscellaneous
Jan.	17,613	4,783	12,124
Feb.	17,755	4,115	11,777
Mar.	12,564	1,161	10,022
April	14,074	1,406	11,167
May	11,788	2,310	9,356
June	18,383	2,808	10,209
July	12,485	3,661	6,586
Aug.	11,916	4,394	6,911
Sept.	11,013	3,753	6,801
Oct.	16,737	5,941	9,528
Nov.	7,873	1,446	6,065
Dec.	9,510	3,154	5,534
Year	161,810	38,976	109,085
1933			
Jan.	11,128	1,501	8,830
Feb.	16,588	8,347	7,660
March	8,903	1,270	6,787
April	9,502	2,938	6,291
May	16,243	2,858	8,183
June	37,020	20,894	14,013
July	20,058	6,013	11,417
August	16,320	2,581	10,618
Sept.	15,637	1,008	13,239
9 Mo.	151,399	47,455	87,279

Railroad Locomotives

Units Shipments

1932	Domestic	Foreign
Jan.	..	..
Feb.	1	4
Mar.	..	3
April	8	..
May	13	2
June	17	..
July	9	..
Aug.	9	..
Sept.	9	4
Oct.	10	2
Nov.	8	..
Dec.	6	..
Year	80	15
1933		
Jan.	2	..
Feb.	3	..
March	2	..
April	1	..
May	1	..
June	0	2
July	..	..
August	2	1
Sept.	2	..
9 Mo.	13	3

Foundry Equipment Order Index†

1932	
Jan.	20.5
Feb.	27.6
Mar.	27.5
April	13.7
May	18.0
June	14.2
July	18.7
Aug.	18.6
Sept.	11.9
Oct.	23.2
Nov.	11.5
Dec.	16.5
Year	....
1933	
Jan.	68.4
Feb.	16.1
March	9.8
April	19.4
May	25.7
June	45.5
July	48.6
August	56.2
Sept.	34.9
9 Mo.	....

†Average monthly shipments, 1922-23-24 taken as 100.

Malleable Castings

Net Tons

1932	Output	Shipments	Orders booked
Jan.	20,399	19,658	20,332
Feb.	19,834	19,432	17,808
March	17,844	19,392	16,235
April	15,461	16,847	16,185
May	16,597	18,075	16,463
June	15,018	16,450	13,330
July	9,447	11,359	8,658
August	6,804	8,631	7,776
Sept.	10,051	9,746	10,582
Oct.	12,274	11,615	12,850
Nov.	13,622	12,745	14,304
Dec.	14,128	14,366	14,504
Year	171,479	178,316	169,027
1933			
Jan.	12,577	14,248	12,404
Feb.	13,575	14,068	11,077
March	9,756	10,967	12,380
April	17,871	16,666	17,856
May	24,628	23,077	24,671
June	31,118	29,268	31,997
July	30,865	29,155	28,458
August	31,811	30,195	28,323
Sept.	27,078	25,402	22,744
9 Mo.	200,443	193,965	191,068

Steel Castings

Net Tons

1932	Total bookings	Total production
Jan.	17,393	18,395
Feb.	17,015	18,759
March	16,593	20,433
April	12,801	17,474
May	11,342	14,463
June	12,765	12,839
July	9,301	11,460
August	10,147	12,331
Sept.	11,883	11,337
Oct.	11,896	12,480
Nov.	13,235	13,712
Dec.	13,283	13,886
Year	155,837	175,831
1933		
Jan.	12,942	13,951
Feb.	11,857	12,438
March	11,458	13,209
April	14,507	12,071
May	20,782	19,072
June	32,026	27,300
July	29,505	29,240
August	29,057	30,992
Sept.	.....	.....
9 Mo.	.....	.....

Mechanical Stokers

—Sales—

1932	Fire tube boilers	Water tube boilers
Jan.	70	45
Feb.	63	26
March	60	23
April	80	15
May	41	30
June	65	48
July	70	44
August	99	38
Sept.	117	46
Oct.	96	21
Nov.	79	12
Dec.	78	20
Year	920	367
1933		
Jan.	50	13
Feb.	33	22
March	67	17
April	26	31
May	52	41
June	137	50
July	105	65
August	153	60
Sept.	146	27
9 Mo.	769	326

Steel Furniture

Dollars, 000 omitted

1932	Business shipments	Shelving, shipments
Jan.	977	269
Feb.	807	229
March	780	259
April	753	190
May	653	196
June	671	177
July	521	155
August	543	141
Sept.	577	146
Oct.	622	142
Nov.	581	125
Dec.	610	135
Year	8,102	2,166
1933		
Jan.	582	121
Feb.	464	104
March	482	137
April	404	133
May	511	166
June	636	165
July	522	156
August	693	178
Sept.	734	163
9 Mo.	5,031	1,328

Babbitt Metal

Pounds 000 omitted

1932	(a) Total production	(b) Sales
Jan.	1,743	1,281
Feb.	1,577	1,142
March	1,595	1,188
April	1,419	1,060
May	1,345	947
June	1,319	858
July	1,275	870
August	1,319	994
Sept.	1,406	1,108
Oct.	1,573	1,192
Nov.	1,265	944
Dec.	1,149	823
Year	16,990	12,412
1933		
Jan.	1,346	1,073
Feb.	1,117	917
March	1,134	941
April	1,544	1,270
May	2,110	1,785
June	2,327	1,877
July	2,484	1,941
August	2,753	2,059
Sept.	2,419	1,803
9 Mo.	17,299	13,672

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

Unfilled Tonnage

Tons United States Steel Corp.

1932	Unfilled orders	Net change	Per cent change
Jan.	2,648,150	87,203—	3.19—
Feb.	2,545,629	102,521—	3.88—
March	2,472,413	73,216—	2.87—
April	2,326,926	145,487—	5.88—
May	2,177,162	149,764—	6.44—
June	2,034,768	142,394—	6.54—
July	1,966,302	68,466—	3.36—
Aug.	1,969,595	3,293+	0.16+
Sept.	1,985,090	15,495+	0.78+
Oct.	1,977,040	11,950+	0.62+
Nov.	1,968,301	28,739—	1.45—
Dec.	1,786,140	161—	0.01—
Year	.....	...	.....
1933			
Jan.	1,898,644	69,495—	3.50—
Feb.	1,854,200	44,444—	2.30—
March	1,841,002	13,198—	0.70—
April	1,864,574	23,572+	1.27+
May	1,929,815	65,241+	3.49+
June	2,106,671	176,856+	9.16+
July	2,020,125	86,546—	4.10—
August	1,890,444	129,681—	6.40—
Sept.	1,775,740	114,704—	6.06—
9 Mo.	.....	.....	....

Electric Power

Millions Kilowatt Hours Production*

1932	
Jan.	7,567
Feb.	7,023
March	7,323
April	6,790
May	6,650
June	6,563
July	6,547
Aug.	6,764
Sept.	6,752
Oct.	7,073
Nov.	6,952
Dec.	7,149
Year	83,153
1933	
Jan.	6,932
Feb.	6,285
March	6,674
April	6,462
May	6,996
June	6,231
July	7,466
August	7,646
Sept.	.....
9 Mo.	.....

*For public use

Coke

Net Tons Production

1932	By-Product	Beehive
Jan.	2,100,923	87,900
Feb.	1,995,780	85,800
March	2,089,391	87,400
April	1,883,391	56,000
May	1,742,517	45,000
June	1,536,712	41,200
July	1,523,422	38,200
Aug.	1,473,904	40,700
Sept.	1,544,491	45,700
Oct.	1,738,716	67,600
Nov.	1,751,581	81,400
Dec.	1,786,085	95,600
Year	21,166,913	772,500
1933		
Jan.	1,784,527	81,900
Feb.	1,638,817	84,100
March	1,666,035	93,300
April	1,656,183	47,000
May	1,921,257	47,300
June	2,241,432	50,100
July	2,797,316	68,400
August	2,923,418	70,600
Sept.	1,554,491	45,700
9 Mo.	19,341,035	602,200

Steel Barrels

Units

1932	Production	Shipments
Jan.	359,685	352,135
Feb.	367,472	369,882
March	452,294	453,621
April	447,379	452,191
May	427,299	425,662
June	651,916	654,561
July	352,614	353,336
Aug.	362,993	360,509
Sept.	395,640	398,241
Oct.	422,637	417,490
Nov.	373,190	376,647
Dec.	300,570	307,372
Year	4,920,117	4,928,307
1933		
Jan.	292,201	292,609
Feb.	269,755	272,432
March	373,340	371,945
April	401,086	402,506
May	465,418	467,695
June	572,851	568,437
July	555,402	552,923
August	480,670	470,632
Sept.	519,191	524,719
9 Mo.	3,929,916	3,923,898

River Traffic

Net Tons

1932	Allegheny	Monongahela	Ohio
Jan.	.....	25,327	45,199
Feb.	2,200	20,089	40,737
March	550	32,234	33,254
April	501	23,849	32,972
May	2,550	23,941	28,267
June	3,611	18,291	27,306
July	1,400	13,677	22,895
Aug.	3,400	26,390	43,621
Sept.	1,200	18,831	28,557
Oct.	21,280	24,305	40,399
Nov.	23,225	29,851	45,735
Dec.	7,200	28,169	30,048
Year	67,117	284,954	418,990
1933			
Jan.	1,627	11,724	18,002
Feb.	1,656	17,904	23,614
March	425	19,546	32,917
April	3,025	35,795	37,191
May	4,400	39,890	46,038
June	815	58,179	56,484
July	3,900	68,453	62,096
August	3,234	67,389	69,531
Sept.	2,000	43,026	38,480
9 Mo.	21,082	361,916	384,353

WHERE-TO-BUY

A classified list of advertisers according to products. ¶Index to advertisements gives page number of any advertiser.

ABRASIVES (Polishing)
Carborundum Co., The, Niagara Falls, N. Y.
Norton Co., Worcester, Mass.

ACCUMULATORS
Logemann Brothers Co., 3126 Burleigh St., Milwaukee.
Morgan Engineering Co., The, Alliance, O.

ACETYLENE
Linde Air Products Co., 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS—See FERROALLOYS

ANGLES, CHANNELS—See BEAMS, CHANNELS, ANGLES

ANGLE IRON BENDERS
Excelsior Tool & Machine Co., Ridge and Jefferson Aves., East St. Louis, Ill.

ANODES (All Type)
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

ARBORS
Morse Twist Drill & Machine Co., New Bedford, Mass.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee.

BANDS—See HOOPS AND BANDS

BANDS (Iron and Steel)
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Republic Steel Corp. Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., Frick Bldg., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
McClintic-Marshall Corp., Bethlehem, Pa.

BARRELS (Plating)
Udylite Process Co., 3953 Bellevue Ave., Detroit, Mich.

BARS (Alloy)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Steel & Tube Co., Canton, O.

BARS (Concrete Reinforcing)
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 S. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS (Iron)—See IRON (Bar)

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

BEARINGS (Ball)
Bantam Ball Bearing Co., The, South Bend, Ind.

BEARINGS (Bronze)
Shenango-Penn Mold Co., Dover, O.
Shoop Bronze Co., 344-54 W. 6th St., Tarentum, Pa.

BEARINGS (Journal)
Bantam Ball Bearing Co., The, South Bend, Ind.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Roller)
Bantam Ball Bearing Co., The, South Bend, Ind.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Bantam Ball Bearing Co., The, South Bend, Ind.
Timken Roller Bearing Co., The, Canton, O.

BENDING AND STRAIGHTENING MACHINES
Alliance Machine Co., The, Alliance, O.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Bros. Co., 3126 Burleigh St., Milwaukee.
Morgan Engineering Co., The, Alliance, O.
Thomas Spacing Machine Co., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Construction Co., 1301 Koppers Bldg., Pittsburgh.
Youngstown Sheet & Tube Co., Youngstown, O.

BILLET CHIPPERS—SEE CHIPPERS (Billet)

BILLETS (Alloy and Carbon Steel)
Alan Wood Steel Co., Conshohocken, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. La Salle St., Chicago, Ill.
Republic Steel Corp., Youngstown, O.
Timken Steel & Tube Co., Canton, O.
Washburn Wire Co., Phillipsdale, R. I.

BILLETS (Forging)
Alan Wood Steel Co., Conshohocken, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Midvale Co., The, Nicetown Philadelphia, Pa.
Republic Steel Corp., Youngstown, O.
Timken Steel & Tube Co., Canton, O.

BILLETS AND BLOOMS
Alan Wood Steel Co., Conshohocken, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 327 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Youngstown, O.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Timken Steel & Tube Co., Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

BLAST FURNACE SPECIALTIES
Bailey, Wm. M., Co., 702 Magee Bldg., Pittsburgh, Pa.

BLAST FURNACES—See FURNACES (Blast)

BLOCKS (Chain)
Yale & Towne Mfg. Co., 4530 Tacony St., Philadelphia, Pa.

BLOWERS
General Electric Co., Schenectady, N. Y.
Strong, Carlisle & Hammond Co., The, 1394 W. 3rd St., Cleveland, O.

BOILERS
Murray Iron Works Co., Burlington, Iowa.

BOILER HEADS
Bethlehem Steel Co., Bethlehem, Pa.

BOILER TUBES—See TUBES (Boiler)

BOLT AND NUT MACHINERY
Landis Machine Co., Waynesboro, Pa.

BOLTS
Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Jones & Laughlin Bldg., Pittsburgh, Pa.
Oliver Iron & Steel Corp., S. 10th & Muriel Sts., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson, Jos. T., & Son, Ins. 16th and Rockwell Sts. Chicago Ill.

BOXES (Annealing)
United Engineering & Fdry. Co., First National Bank Bldg., Pittsburgh, Pa.

BOXES (Case Hardening)
Strong, Carlisle & Hammond Co., The, 1394 W. 3rd St., Cleveland, O.

BOXES (Open Hearth Charging)
Morgan Engineering Co., The, Alliance, O.
Wellman Engineering Co. 7000 Central Ave., Cleveland, O.

BRAKES (Electric)
Cutler-Hammer, Inc., 1211 St. Paul Ave., Milwaukee, Wis.
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland, O.

BRICK (Fire Clay)
Eureka Fire Brick Works, 1015 House Bldg., Pittsburgh, Pa.
Strong, Carlisle & Hammond Co., The, 1394 W. 3rd St., Cleveland, O.

BRICK (Silica)
Carborundum Co., The, Perth Amboy, N. J.

BRICK (Silicon Carbide)
Norton Co., Worcester, Mass.

BRIDGE CRANES (Ore and Coal Handling)
Alliance Machine Co., The, Alliance, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland.

BRIDGES, BUILDINGS, VIADUCTS, STACKS
American Bridge Co., Frick Bldg., Pittsburgh, Pa
Belmont Iron Works, 22nd and Washington Ave., Philadelphia, Pa.
International-Stacey Corp., Columbus, O.
McClintic-Marshall Corp., Bethlehem, Pa.
Ohio Structural Steel Co., The, Newton Falls, O.
Truscon Steel Co., Youngstown, O.